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The Dental Student

By

Douglas M. More, Ph.D.

Journal of the
American College of Dentists
March, 1961

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Preface

Several years ago the Committee on Recruitment of the American College of Dentists, after considerable study, came to the conclusion that any effort that had for its objective the interesting of young men and women in a career in dentistry would be aided greatly if more information were available on what motivated a person to consider such a professional career.

The few limited studies on motivation that had been made up to that time offered valuable suggestions and gave encouragement to the desirability of broader efforts in this field.

In the Spring of 1958, the then Chairman of the Committee on Recruitment—Dr. J. Wallace Forbes of Philadelphia—and the Secretary of the College, consulted with Dr. Nathan Kohn, Jr., of NK and Associates, Inc., of St. Louis. Dr. Kohn previously had indicated an interest in the recruitment problem in a discussion with a committee of the St. Louis Section of the College relative to recruitment in Missouri.

The result of the conference with Dr. Kohn was to recommend to the Board of Regents that such a study be undertaken for the College by Dr. Kohn and his associates.

In the early weeks of the opening of the 1958-1959 school year, with the cooperation of the deans and faculties of the dental schools, questionnaires were sent to the Freshman students to find out why they had chosen dentistry as a career. This effort was unusually successful in that returns were received from more than 99 per cent of all the students entering the dental schools in the Fall of 1958.

Subsequent discussion with deans, teachers, students (including upper classmen) made available a mass of information that should prove to be most valuable in determining what factors play important roles in the motivation of students for a dental career.

In the material that follows Dr. Kohn and his associate Dr. More have analysed the various factors presented, and have offered suggestions that should help the dental profession in any recruitment efforts having for their objective the securing of a fair share of the qualified young men and women for a career in dentistry.

Douglas M. More and Nathan Kohn, Jr. are members of the St. Louis firm of NK and Associates, Inc. They are psychologists and

personnel consultants. Their organization, approved by the American Board for Psychological Services, has an extensive background in management consulting, organizational appraisals, executive counseling, recruiting and assessment of personnel, and motivation market research.

Dr. More holds a degree in physics and the Ph.D. degree in Human Development, with emphasis in psychology, from the University of Chicago, receiving the latter in 1951. He has taught at the University of Chicago, Washington State College, University of Kansas City, and Northwestern University. His publications include studies in occupational psychology and sociology of salesmen, bankers, engineers, pharmacists, and foremen in industry.

Dr. Kohn, a director of NK and Associates, Inc., has been active in industrial personnel consultations, psychological research, attitude and motivational studies, and psychological testing. He holds the A.B., LL.B., and Ed.D. degrees from Washington University, and the M.A. degree from the University of Minnesota. He has held a number of positions as a director and social worker in research, church, and youth groups. He is a faculty member at Washington University.

—O. W. B.

Survey of Entering Dental Students

The best allocation of manpower to meet a society's need is one of the more complex and serious problems of a modern nation. A "planned" society can ignore individual liberty to choose a career and can assign available manpower to solve its determined needs in accord with its master program. In a "free" society the movement of young people into occupations tends to follow more closely the principles of supply and demand as these are reflected in the total labor market. As such a free labor market develops a shortage in one sector, there begin to arise increased inducements and appeals for young workers to enter that sector, and these young workers increasingly see this as an improved opportunity to insure a successful career. But, characteristically, in a free society, we do not begin to offer inducements until the need becomes apparent. The professions and skilled crafts, however, demand four to eight or even more years of intensive training before we can realize the potential of these men answering the call. This lag intensifies the problem at hand and often results in further social-occupational imbalances. We may resort shortsightedly to over-inducements, or we may turn to forms of planned allocation to and utilization of persons in skilled and professional categories resulting in long-range losses of fundamental liberties.

It is within this context that we raise the fundamental question of the future for dentistry. Does it receive its fair share of the available manpower pool? Can dentistry meet existing and projected demands placed on it by society as a whole for adequate care? Are those entering dental training each year exactly those members of the labor pool who are best suited (physically, mentally, and emotionally) to be the dentists of the future? These kinds of questions can be answered only by first specifying the underlying requirements and resources.

If we wish to do no more than maintain present standards of dental care, as represented by an over-all ratio of one practicing dentist to 2,000 of the general population, then the rate of producing new dentists per year must be sharply increased. If we wish, further, to achieve an improved geographic distribution of dentists, and to extend adequate care to that 40 per cent of the population in lower socioeconomic groups, the shortage projected will be al-

most double that of just maintaining present ratios. This, however, relates to the future and is beyond the scope of these papers. It remains for the using public and the dental profession to work out what level of dental care will be demanded and in turn provided.

Looking backward we may now say that dentistry has at least held its own in getting students. While the dental population has not been increasing at the rate of the total population, we need to remember that the supply of young people reaching college age decreased in actual numbers from 1940 to 1951, and did not regain its 1940 level until 1958. Our country's population explosion has been more recent, and a sharp increase in the actual number of available candidates to the professions cannot be expected earlier than the years 1961-62. The demands for all kinds of professional services are increasing and the competition among the professions for the available candidates is becoming sharp. Dentistry must exert wise efforts to remain competitive in this developing recruitment. Dentistry has some advantages in this recruiting struggle and we will indicate these at appropriate points in later papers.

The 1958 Study of Dental Students

Concern along lines indicated, especially as to the adequacy of entering students in both quantity and quality to fulfill dentistry's future needs, led to a survey of the entering class, Fall 1958. Questionnaires were completed in 53 schools in the United States, Canada, and Puerto Rico. There were 3,578 usable questionnaires returned to St. Louis, the bulk of the information was coded and punched on IBM cards and some additional items were hand tabulated. Summaries of these data form the core of succeeding sections.

Supplementing and enriching the statistical data, 1,250 students in 20 institutions were seen in free-discussion small group interviews. Over a third of these group interviews were with senior classmen. Such open-ended discussions do not provide data that can be easily tabulated, but they did provide insights and meanings into the dynamics underlying our numerical findings. No systematic account of these interviews can be attempted in these pages.

Basic Concepts of the Study

A man's work is of central importance to his life; it is a major determinant of not only his occupational role but of his total social

role. It provides him a position in the occupational stratification of his community, affords a certain level of income, and to an appreciable extent correlates his friendships and memberships. The community comes to have rather generalized expectations about the types of people in certain jobs. We may hear such a phrase as, "He is a born salesman," and at other times hear surprise expressed when someone much different from the stereotype of an occupation is found to be successful in it. To persons in the dental profession, one dentist is as different from the next as one citizen is from another. Yet, were we to poll the public, we would certainly find stereotypic images of the dentist, not all of them flattering and some perhaps embarrassing. There are reasons to expect some similarities among dentists which differentiate them *as a group* from persons in other well-defined occupations. The subtle differences between one man's practice and another's may impress the dentist; the lay observer sees better the gross similarities.

It is possible that the practice of dentistry produces some of the commonalities we observe in dentists, just as Willard Waller many years ago observed perceptively in *What Teaching Does to Teachers.* Similarly, the entering dental student is by no means a dentist—in four years he must not only acquire a smattering of specialized knowledge and particular manual skills, he must become, through some deeper transformation, a professional man. This process remains to be studied, and a serious waste of time, funds, and data will be entailed if we cannot find means to do this with the 1958 freshman class on whom we have so much initial information.

At this point our aim is to describe common features of entering dental students. We indicate the socioeconomic and educational level of the home from which he came, and at one point compare his father's occupation with those of physicians, engineers, sales representatives, bankers, and business leaders on whom information of similar kind is available. Subsequently we report on patterns of motives to enter dentistry, fears and anxieties about it, and beliefs about public attitudes toward the dentist. Finally we indicate what these entering students felt about their future practice, income, type of work, teaching, research, and specialization.

In all that follows, however, we follow only the simplest statistical procedures—in fact, little more than enumerative ones. It has been impossible, with the resources available, to pursue many scientifi-

cally important questions on which our data bear. The original questionnaire contained 120 numbered questions; it was feasible to punch some, but not all, of the information from 70 of these on two 80 column IBM cards. The possible correlations and patterns within these data alone is enormous. When we say there were 120 questions, this tells little of the total data problem; one item alone, if fully treated, would have taken up 50 columns of a card, another 17 columns, and a third 32 columns.

However much our scientific interest may have been aroused by these possibilities, we have ruthlessly had to pare our interests to the minimum to achieve such results as we may offer here. Some of these questions which are of importance to the social scientist must not be lost from sight. We record a few of them here, along with some practical implications for dentistry where the answers seem relevant.

1. Persons entering dentistry are in one of the more upwardly mobile groups in our whole society. They enter a profession of high status and earning capacity. If we compare the motives of those who enter dentistry from homes in labor and semi-skilled classes with the motives of those from homes in which the father already has equivalent status to a dentist (dentistry itself, medicine, law, engineering, business leaders), will we find distinct differences between patterns of motives of these groups of students? If there are, we can add, dentistry, when recruiting, should approach a high school in the suburbs differently from one in the city factory district!

2. A very large group among these entering dental students come from homes in which the mother had appreciably more education than the father. Clearly, a detailed comparison of sub-groups in which parental education was equal, father much more than mother, and mother much more than father could reveal important relationships between hypergamy and motives to enter dentistry.

3. The statistical summaries reveal a fairly homogeneous picture of an entering student who is healthy, intelligent, and sociable. But, the open-ended psychological material presents many distinct "personalities." An important study would provide for depth, clinical analyses of these data and personality ratings from them. These subsequently should be correlated with checklists and sociological materials, and definitely related to the individual's progress in dental school. The cost of such a project for the total group would be pro-

hibitive, but a 10 per cent sample might be accorded this treatment for less than $40,000.00.

4. One of the great opportunities our data afford is the study through time of shifts in attitude in dental school. We need follow up with this group now and after graduation to learn more about the total process of becoming a professional man. Repeating several items now available could permit detailed analysis of attitudinal shifts. Further depth interviewing will be required, but, on this point, only limited sampling could be feasible.

Appendix

Some comments on "The Dental School Applicant," William R. Mann and Grace Parkin, *Journal of Dental Education,* 24:16-21, March 1960:

Many of the items summarized by Mann and Parkin from the survey of the dental school applicant are identical with those in the current study of accepted students. Some divergences in findings lead to need for caution in interpreting the *applicant* survey as providing results relevant to the dental student.

In general, the findings reported in the Mann and Parkin paper are congruent with, or at least highly similar to, those found on our survey of accepted students. In occasional tables we find some wide divergences in percentages. Some of these are sufficiently great to lead to differences in interpretation.

Mann and Parkin express some concern that "Recently, it has been said by some that dental students . . . are motivated primarily to study dentistry in order to obtain prestige and status." They advance, as an alternative, the view that "a number of those who apply for dentistry may have made a conscious or subconscious decision not to attempt the study of medicine because of scholastic records that were not competitive for admission to medical school." Our position is that a complex *pattern* of motives especially suited to dentistry is at issue. It strikes us that their interpretation of persons seeking dentistry simply because they couldn't enter medical school is an instance of negative analysis, and it begs the question of what array of positive motives were at play (see the chapter on "Some Motives for Entering Dentistry").

Our findings on "Choice of a Career in Dentistry" lead to a broad assertion that an applicant has a far better chance of acceptance as

a dental student if there is some influence of a dentist working in his behalf. He is more likely of entry if there has been contact with dental students. May we also emphasize that there may be "selective perception" by admissions committees when the following is studied:

Father a:	*Applicants* %	*Accepted Students* %
1) Dentist	7.5	8.2
2) Physician	4.1	2.6

Indeed, as we began to note such fine differences between the survey of applicants and the survey of students, we were impressed that a systematic comparison should reveal many of the artifacts of the admission process—those aspects of candidates' records which somehow resonate with the probably unconscious biases of admissions committees.

Background Characteristics

The young man entering dentistry comes from a family and educational background much above average for the total population. Further details on this point are contained in the following chapter, "Social Origins of Future Dentists." There seems to have been a rather general influence on the part of parents to stress the importance of getting higher education and making good grades. Over 60 per cent of these students indicate their parents felt that making good grades in school was "necessary," "important," and "very important."

While educational interest is stressed, these students do not seem to think of their parents as being active in community or social affairs. Over 40 per cent indicate no community participation for their parents; and, the combined frequencies of "church," "YMCA," and "Scouting" reaches only 24 per cent. The second largest category for parents' participation is 17.5 per cent for "community drives, civic organizations, and PTA." Thus, there does not seem to be a strong family example for the dental student to become active in the community himself. Perhaps we may see a similar tendency in these students to avoid participation. Only 6.7 per cent list a recent membership on a committee of any kind, 44 per cent indicated no participation in campus or community activities. These latter actually answered "none" or "nothing," and an additional 10.5 per cent left this inquiry blank. On the other hand, there seems to be a latent desire for leadership, even though this is not carried into action. For example, 58 per cent say they would like to be chairman of a group, 44 per cent are willing to do the detail work while being chairman, 38 per cent would prefer organizing the work so others do the detail, and only 22 per cent state they would rather someone else organized and directed the group.

Table 1 presents the frequencies of activities and offices held in high school and college. The decrease in participation and leadership between high school and college is striking, but this kind of a trend also seems true of other college groups. The impact of this table comes out in the fact that we gave credit in our tabulation of answers for anything listed—such items as member of a church choir, chairman of a fraternity dance committee, patrol leader in Boy Scouts, and any type of athletics.

TABLE 1

FREQUENCIES OF EXTRACURRICULAR ACTIVITIES AND "OFFICES HELD" AS REPORTED BY ENTERING DENTAL STUDENTS

Number Listed	*Activities*				*Offices*			
	HIGH SCHOOL		COLLEGE		HIGH SCHOOL		COLLEGE	
	N	%	N	%	N	%	N	%
"None"	287	8.0	734	20.5	1,505	42.1	2,070	57.9
1	398	11.1	798	22.3	931	26.0	810	22.6
2	672	18.8	814	22.8	636	17.8	424	11.9
3	842	23.5	652	18.2	314	8.8	161	4.5
4	654	18.3	311	8.7	112	3.1	59	1.6
5	392	11.0	174	4.9	34	1.0	13	0.4
6	190	5.3	49	1.4	15	0.4	6	0.2
7	62	1.7	18	0.5	4	0.1	3	0.1
8	37	1.0	9	0.3	3	0.1	1	—
9 and over	32	0.9	4	0.1	2	—	0	—
No Answer	12	0.3	15	0.4	22	0.6	31	0.9
Totals	3,578	100.0	3,578	100.1	3,578	100.0	3,578	100.1
Average	3.1		2.0		1.1		0.7	
Median	2.5		1.3		0.3		0.0	

At another point in the questionnaire we provided a considerable list of activities and asked respondents to check those in which they had participated in the past month. Table 2 lists frequencies of these by major groupings. "Active sports" includes golf, tennis, fishing, hunting, and other active games. Under "sedentary group activities" we placed card playing, parties, barbecues, and informal group games or activities. "Sedentary solitary activities" include watching TV, reading, gardening, and the like. Under organizations we coded community, church,, professional, and service groups. Of these four classifications, the highest average frequency is for sedentary solitary activities, and the lowest participation is in organizations. There are moderate frequencies of active sports and of sedentary group activities.

Table 3 gives the military status of these students. These figures deserve comparison with those for the total applicant group. Sixty-three per cent of applicants have had no military service and are subject to future service. After admission we find almost 10 per cent fewer in this classification among accepted students. If we assume the group that Mann and Parkin studied produced the 1958 group

TABLE 2

FREQUENCY OF TYPES OF ACTIVITIES AMONG ENTERING DENTAL STUDENTS

Number Mentioned	*Active Sports* N	%	*Sedentary Group Activities* N	%	*Sedentary Solitary Activities* N	%	*Organizations Community and Professional* N	%
0	149	4.2	110	3.1	10	0.3	166	4.6
1	1,048	29.3	1,081	30.2	253	7.1	2,098	58.7
2	1,074	30.0	1,557	43.6	775	21.7	598	16.7
3	648	18.1	546	15.2	1,064	29.7	85	2.4
4	207	5.8	2	0.1	840	23.5	21	0.6
5	55	1.5	—		438	12.2	1	—
6	—		1		147	4.1	—	
7	—		1		3	0.1	—	
Data missing	397	11.1	280	7.8	48	1.3	609	17.0
Total	3,578	100.0	3,578	100.0	3,578	100.0	3,578	100.0

we surveyed (strictly speaking this is not exact), then of 3,212 applicants in this classification only 1,905 are admitted, eliminating 1,307! These figures are merely illustrative, and we do not think they are precisely accurate. They do indicate a very strong preference among admissions committees for the veteran or reservist. There are some obvious justifications of this; the veteran tends to be older, more mature and stable, more certain of his vocational choice, and less apt to be lost to his school. Nonetheless, some unconscious (or conscious) bias must be at work when we find that of

TABLE 3

MILITARY STATUS OF ENTERING DENTAL STUDENTS

	N	%
Veteran, no reserve commitment	492	13.8
Veteran, in reserves	633	17.7
No service, but in reserves	202	5.6
No service, must complete in future	1,905	53.2
No service, exempt status	272	7.6
Data missing	74	2.1
Total	3,578	100.0

those rejected for dental school, 85 per cent have the label "eligible for future military service."

Of the 3,578 students studied, 1,244 (35 per cent) were married at the time the questionnaire was administered. Only 25.6 per cent of applicants were married. For reasons similar to the preference for veterans, here we observe a preference for the married student. Of the married group 73 per cent (26 per cent of the total student body) expect the wife to work. Clearly this will ease the financial burden of their professional education. Beyond the 35 per cent married on entry, another 25 to 30 per cent expect to marry before finishing dental school. While the wife may constitute an appreciable support, 1,203 of these married men state they will have to work at least part time or Summers to finance themselves. A somewhat smaller proportion of the single students, about 85 per cent compared to 97 per cent of married students, say they expect to have to work through school.

In this section we have listed and commented on some of the common background features of entering dental students. We have compared some of these findings with comparable ones for applicants in the same period covered by our questionnaire. Some differences found permit raising questions about the validity and objectivity of admissions procedures.

Social Origins of Future Dentists[1]

This paper explores some aspects of family background among men who are now entering dentistry. This occupation, among the professions, exhibits remarkable homogeneity so far as the nature of the work performed by members is concerned. Less than 4 per cent of all practicing dentists are listed as specialists.[2] Another small percentage of dentists may prefer to limit their practice in one way or another, but there still is far less tendency in dentistry toward extensive sub-fields than is found in law, medicine, engineering, or even accounting. This particular type of occupational uniformity affords the sociologist a rare opportunity to explore for possible regularities in social background, career choice patterns, motivations and other personality factors as related to occupation.

The questions we deal with here are sharply restricted to a few portions of the available data related to mobility. In regard to occupational mobility we will outline: a) extent of occupational inheritance from father, b) extent to which professional status of fathers (not dentists) is maintained, and c) extent of influence to enter dentistry by dentist family members other than father. Secondly, we will outline the extent of educational mobility of those who enter dentistry.

Rationale for the study. Unscientific as it may sound, we did not "select" this remarkable profession for study to test any hypotheses derived from any general theory of professions. The study "fell" on us because members of the American College of Dentistry expressed concern about the number and calibre of young men entering dentistry and they wished to explore the reasons for entering the field so as to be able to focus and intensify their efforts at recruitment into the professional group. Thus in Merton's[3] statement, "What is considered occupational choice from the standpoint of the individual becomes the process of recruitment from the standpoint of the profession and the allocation of personnel in various occupational statuses from the standpoint of society. What the in-

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[1] Reprinted by permission from *The Midwest Sociologist*, July 1959, Vol. XXI, No. 2, pp. 69-76.

[2] American Dental Association, Bureau of Economic Research and Statistics, *Facts About States for the Dentist Seeking a Location, 1958*, Chicago, May 1958, p. 7.

[3] R. K. Merton, G. G. Reader, and P. L. Kendall, eds., *The Student-Physician*, Cambridge: Harvard University Press, 1957, p. 68.

dividual defines as a promising opportunity afforded by the labor market, the profession defines as an 'acute shortage' (say, of doctors or engineers or nurses), and the society defines as an imbalance of occupational distribution." We were charged in the research to address the central of the three points of view.

Our data from individuals, however, was couched by them in the first terms as though they were free agents making a reasoned choice from the field of available types of work. This impression may have been strengthened in many of them because dentistry was very recently a second, third, or even more remote career choice. And we also learned in a coordinate study that vocational counselors both in college and high school rarely encourage men toward dentistry. More often they seem to discourage going into dental training, or think of it only when the prospect may have been unable to gain admission to medicine or engineering, often for some academic reason or other. The legerdemain of hindsight casts a happy glow over these circumstances, for these students now have come to realize that they have work motivations quite unsuited to such other occupations.

The unfortunate consequences of the foregoing series of events are rather obvious. Even though it requires an equivalent dollar outlay per student to train a dentist four years to that needed to train a physician, dental schools in fact must select from an academically more poorly qualified population. The investment of professional pride in a last ditch choice can hardly be expected to equal that reserved for one's first love, though the psychology of this matter needs further exploration. Both medical and dental students are expected in their first two years to cover the same basic courses in physiology, anatomy, biochemistry and pharmacology. Yet the general public, while begrudgingly according the dentist high community status, still considers him something of a mechanic in a white coat. At the same time the physician seems to be considered a sort of super philosopher who, because he happens to like people, willingly directs his wisdom to solving assorted human miseries from dandruff to ingrown toenails.

Dental specialization has been fairly recent, but we were somewhat surprised to learn that less than 4 per cent of all practicing dentists practice a distinct specialty, such as orthodontics or oral

surgery. By contrast, it is getting so hard to find an old-time G.P. in medicine that hapless young couples now search for an internal medicine man who is willing to make house calls! Thus dentistry presents a striking homogeneity of job performance, compared with most other professions or even subprofessions. This occupational homogeneity has special sociological and psychological implications, for it may be possible here to find more clear-cut correspondence between social and psychological factors and the occupation as a performance area of life than it is possible to find in studying other more heterogeneous work groups. We raise here the question, though it remains to be explored, whether there may not be some fundamental regularities relating trends toward specialization in both extent and intensity and such other phenomena as status and prestige, income, professional attitudes, and propensity for community service.

The recruitment problem, mentioned before, is not to be dismissed as unimportant—even though it is no more than a bit of data from the point of view of general sociological theory of occupations. It comes home in a shocking, personal sense, however, when we learn that the average age of the practicing dentist is over 50, that the current national ratio of dentists to public is about 1:2,000, and that the rate of increase of the general population currently is over one and a half times as great as the rate of growth of the population of dentists. In Minnesota, for example, the average age of practicing dentists is over 55, and there is a current ratio of 1:1,500. By 1975, present trends holding (i.e., since the end of World War II—now nearly fourteen years), we can expect a ratio of 1:3,000! The situation for that nearly one-fourth of the population who are Negro, Mexican, Puerto Rican, and Indian (those of Chinese and Japanese groups may fare somewhat better) is quite as atrocious as it is for other services of sociological interest. There is, therefore, some pertinency to this inquiry.

We are jolted to learn on the other side of the picture that office practice of dentistry leaves much to be desired so far as efficient handling of clients is concerned. And some 40 per cent of the dentists in a major metropolitan survey indicated they would be overjoyed to have more patients. The maldistribution of service so indicated is greater than that for the medical profession. For the bulk

of persons of lower socioeconomic status there not only is relatively little inexpensive dental care available, but they do not seem to use what is present. The commonest picture in all groups below that of the mythical average man in income is use of dental facilities only for curative purposes. A tooth is permitted to disintegrate until simple pain drives the patient to have it pulled. This is repeated until it is no longer feasible to chew steak. Then all the remaining teeth are pulled and cheap full plates sought. Interestingly, it now seems most likely that change in this will come from three sources, all designed to combat in their separate ways a "European" form of socialized medicine. These are company dentistry, union-sponsored medical clinics with a full-time dentist, and low-cost night time clinics run by small groups of dentists who band together to give a night every week to two weeks to such work.

Another factor affecting the use of dentistry by the public is its very high portion of work which must be classed as cosmetic. Estimates here range from 25 per cent to 40 per cent. This aspect combined with the generally inconvenient hours dentists maintain so far as the working men are concerned may account in large part for the relatively higher portion of women who have dental work. Some people guess that the male-female ratio for adults may be as extreme as 40:60. We probed in some interviews to learn if this cosmetic feature detracts from the status of the dentist—moving him in the public eye further from the physician and more toward the druggist purveyors of lotions and suntan creams, or even toward the barber and beautician. Such probes, to put it mildly, are met by very mixed feelings by the students with whom we have talked!

It is within this broad background that we have attempted to find a few regularities of sociological interest. The group as an occupational entity has come to intrigue us as investigators, because it simultaneously enjoys very high professional prestige[4] and seems to be lacking in some of the essential motivations, ethics, and forms of conduct we have elsewhere come to associate with the notion of the very high status professional man.

Data. The data were secured by a questionnaire filled out by entering freshmen in the 52 accredited dental schools of Canada,

[4] C. C. North and P. K. Hatt, "Jobs and Occupations: A Popular Evaluation," *Opinion News*, September 1, 1947, pp. 3-13.

the United States and Puerto Rico in Autumn, 1958. One school failed to return all the material in time to be included in this paper, but it will be reported in subsequent studies. We have the remarkable coverage of 100 per cent on a questionnaire—99 per cent of which is available for this treatment. We have learned also in our study that slightly less than 5 per cent of all who enter dentistry ever fail for any reason to become dentists, thus justifying, in our opinion, the phrase "future dentists" in our title. Supplementing the questionnaire data are group and some individual interviews conducted by Dr. Nathan Kohn and the writer with 1,260 freshmen and 275 seniors in 20 of the represented schools. Considerable question was raised early in the study about possible regional differences, so care was taken within the United States to interview in schools in each region.

The questionnaire itself covered twelve pages including an enormous range of material. It has been possible to code and punch about two-thirds of this information on two IBM decks, and only a small portion of the material on deck. No. 1 is treated here. The bulk of the coded results and syntheses of the interviews will be available later this year.

Findings. The occupation of father was requested on our original questionnaire, and we summarize in Table 1 the occupational groups among fathers of entering dental students, as compared with entrants to other occupations and the general population. The data are collected here in major groupings, such as professional, managerial and official, clerical and kindred, and the like.

We include in Table 1 data from a variety of sources of comparative purposes. This makes feasible the observation of some gross differences in social origin among six major white collar groups and the frequencies in the general population for the same categories as those used in determining the frequencies for the Dental Students column. This is important to note, because the frequencies in the General Population column obviously do not accord with sums for the named categories in the census figures, and an unusually large residual row results. A similar practice seems to have been used for the Medical Students so that these three columns are probably comparable within rough limits.

Overtly this tabulation indicates there is foundation to the gen-

TABLE 1

OCCUPATIONAL GROUPS AMONG FATHERS OF ENTERING DENTAL STUDENTS, COMPARED WITH ENTRANTS TO OTHER OCCUPATIONS AND THE GENERAL POPULATION

	Percentage of Entrants						
Fathers' Occupations	DENTAL STUDENTS	M.D. STUDENTS[a]	EXECUTIVES[b]	SALESMEN[c]	ENGINEERS[c]	BANKERS[c]	GENERAL POPULATION[d]
Professional	23.5	28	14.0	12.3	19.0	15.6	5.6
(Dentist)	(8.2)	(2)					
(Physician)	(2.6)	(11)	(2.2)				
Semi-professional	1.7	3		(Included in professional group)			1.2
Managers, proprietors and officials	25.8	30	48.5	24.7	28.9	27.1	10.6
Sales	8.9	7	5.9	13.3	9.4	9.7	6.1
Clerical and kindred	3.1	2	2.5	11.1	5.6	14.2	6.1
Farm	5.6	4	8.6	4.9	6.0	5.9	15.2
Skilled, craft, etc.	16.1	7	13.4	18.0	24.3	19.8	28.5
(Foremen)	(2.2)	(2)					
Semi-skilled and operators	1.7	4	4.5	15.7	6.8	7.7	6.8
Unskilled	2.2	2					
Service	2.9	2	—				5.0
Other and not classified	8.5	11	2.6				14.9
Total	100.0	100	100.0	100.0	100.0	100.0	100.0
N	3,578	756	8,300	1,342	499	288	

[a] Adapted from Helen H. Gee and John T. Cowles (Eds.), *The Appraisal of Applicants to Medical Schools*, Chap. 8 by H. H. Gee, "The Student View of the Medical Admissions Process," Assoc. of Amer. Medical Colleges, Evanston, 1957, p. 143.

[b] Warner, W. Lloyd, and J. Abegglen, *Occupational Mobility in American Business and Industry*, Minneapolis: University of Minnesota Press, 1955.

[c] More, D. M., "The Derivation of Hypotheses Relating Occupational Mobility and Job Performance," *The Midwest Sociologist*, Vol. XIX, No. 2, May 1957.

[d] 1950 U. S. Census of Population: Detailed Characteristics, U. S. Government Printing Office, 1953.

erally observed phenomenon of occupational "inheritance" (enormously true for top level executives). It is clear additionally that the familiar white collar-blue collar distinction holds, in that the preponderant group of white collar recruits are drawn from families already in a white collar classification. The smallest propensity to draw from the blue collar groups is for Medical Students (19 per cent), the greatest is for Sales (38.6 per cent), with Dental Students (28.5 per cent) and Executives (26.5 per cent) about midway on this continuum.

Moving to somewhat finer detail we may note that the overall profile of frequencies for Dental Students is most nearly matched by that for the Engineers. Insofar as the dentist's work entails a high level of mechanical skill, this finding does not offend common sense. Scrutiny of finer detail in the Engineer's data (unpublished in the original paper) led to some important differences, e.g., over 10 per cent of Engineers have fathers in the Foremen group, 2.2 per cent for the Dental Students. Hence, the "common sense" of our observation here might not stand under closer analysis.

In an overall sense Table 1 indicates a general upward occupational mobility of 76.5 per cent for persons who enter dentistry. Thus, approximately three-fourths of these dental students are entering professional status from families which did not explicitly have it. This upwardly mobile group may well see entering dentistry as a facile means of enhancing their prestige and status in the community.

Table 2 presents in further detail the possible influence of immediate and extended family on the choice to enter dentistry. The degree to which dentists influence sons, grandsons, nephews, etc., to enter dentistry is such that about one person in five entering this field may be seen as responding to the presence of the profession in the field of interaction in the extended-kin group. Similarly one in four may be seen as striving to maintain and solidify professional family status. Rogoff found at the University of Pennsylvania that 45 per cent of entering medical students came from families in which either the father or some immediate kin was an M.D. This implies a marked difference between these two health services in family origin; but, because there is evidence of atypicality in the University of Pennsylvania situation, we hesitate to pursue this comparison further.

Table 3 presents the picture for the educational advancement of these future dentists vis-a-vis their fathers and mothers. In Table 3 we have drawn a subtotal after the college freshman year. The purpose of this subtotal was to determine the percentages of parents whose education actually would be less than that of our students at the time of their entry into dental school and, in fact, for the bulk of our sample we could possibly have included the sophomore and junior college rows as well. We are safe, however, in saying that at the time of entry into dental school our students had achieved greater education than 65 per cent of all of their parents. Four years from June, 1958, the bulk of our sample will have exceeded

TABLE 2

FAMILY INFLUENCES TOWARD DENTISTRY

Category of Influence	*Dental Students*[a] N	PER CENT
1. Father a D.D.S.	293	8.96
2. Father M.D. *and* D.D.S. in family	16	0.49
3. Father M.D., *no* D.D.S. in family	77	2.35
4. Father other "professional" *and* D.D.S. in family	60	1.83
5. Father other "professional," *no* D.D.S. in family	389	11.89
6. Father "White Collar" *and* D.D.S. in family	195	5.96
7. Father "White Collar," *no* D.D.S. in family	1,225	37.45
8. Father "Blue Collar," *and* D.D.S. in family	108	3.30
9. Father "Blue Collar," *no* D.D.S. in family	908	27.76
Total family D.D.S. influence	672	20.54
Total family D.D.S. and M.D. influence	749	22.89
Total "professional" influence	835	25.52
Total "White Collar" influence	2,255	68.93

[a] N equals 3,271 for computations of percentages in this table; data missing for 307 records.

the attainment of all but 14 per cent of the fathers and less than 1 per cent of the mothers.

Table 4 presents a further elaboration of the information concerning the education of parents. We compare here the education of mothers and fathers for each grade level reported. Both Lloyd Warner and Carson McGuire, somewhere in the neighborhood of a decade ago, impressed the writer with the notion that in their opinion upward social movement of young men was frequently stimulated by their mothers. This tendency to stimulate sons to go

TABLE 3

EDUCATION MOBILITY OF FUTURE DENTISTS

Grade Level Attained	*Fathers'* N	PER CENT	*Mothers'* N	PER CENT	*Total Parents'* N	PER CENT
8th and less	652	18.50	465	13.20	1117	15.84
9th	139	3.94	110	3.12	249	3.53
10th	181	5.14	207	5.90	388	5.50
11th	124	3.54	158	4.48	282	4.00
12th	882	25.02	1,314	37.29	2,196	31.15
College Freshmen	152	4.32	175	4.96	327	4.68
Subtotal	2,130	60.46	2,429	68.95	4,559	64.70
Sophomore	232	6.59	360	10.21	592	8.39
Junior	72	2.04	108	3.07	180	2.55
Senior	412	11.70	434	12.30	846	11.98
Subtotal	716	20.33	902	25.61	1,618	22.92
Advanced Degree	497	14.10	31	0.88	528	7.49
Data Total	3,343	94.89	3,362	95.44	6,705	95.11
Data Missing	180	5.11	161	4.56	341	4.89
Total	3,523	100.00	3,523	100.00	7,046	100.00

further than fathers was seen, in their opinion, as being at least in part a reflection of the fact that mothers in such instances tended to have higher educational attainment than the fathers. We are delighted to be able to add weight to this hypothesis at long last on a highly homogeneous and extraordinarily mobile group. In the columns listing the mothers' education with respect to the fathers' education at each grade level, we find that mothers in considerable portion had the same education, but in every instance down to and including graduation from high school, the average mother in the group had more education than the father. Upon graduation from high school and with one year of college, the percentage figure abruptly reverses. However, we again take our subtotal at the level of the college freshman for the same reason we did earlier. For this total, including fathers who went to one year of college, nearly 40 per cent of the mothers had more education than the fathers, whereas only slightly less than 17 per cent had less education than fathers. We again take a final total at graduation from college and exclude from our evi-

TABLE 4

COMPARISON OF MOTHERS' AND FATHERS' EDUCATIONAL ATTAINMENT

Father's Education GRADE	N	*Mothers' Education*[a] SAME N	SAME Per Cent	MORE N	MORE Per Cent	LESS N	LESS Per Cent	SUBTOTAL	MISSING
8th and less	654	273	42.3	372	57.7	—	—	645	9
9th	139	32	23.2	82	59.4	24	17.4	138	1
10th	181	33	18.2	110	60.8	38	21.0	181	—
11th	125	37	30.0	58	47.2	28	22.8	123	9
12th	882	524	60.1	179	20.6	168	19.3	871	11
College Freshmen .	152	22	14.5	34	22.5	95	63.0	151	1
Subtotal	2,133	921	43.7	835	39.6	353	16.7	2,109	24
College Sophomore	232	48	21.0	39	17.0	142	62.0	229	3
College Junior	72	8	11.3	11	15.5	52	73.2	71	1
College Senior	412	136	33.6	7	1.7	263	64.7	406	6
Subtotal	2,849	1,113	39.5	892	31.7	810	28.8	2,815	34
Graduate Degree ..	497	19	3.9	—	—	465	96.1	484	13
Total	3,346	1,132	34.3	892	27.1	1,275	38.6	3,299	47
Missing	117							→224←	
Grand Total	3,523							3,523	

[a] Percentages in these columns computed from the row subtotals.

(Fathers' national median 8.9 years) U. S. Census 1950. (Fathers' median 11.25 years; Mothers' median 11.8 years) Our sample.

dence on the hypothesis those whose parents have a professional degree or an advanced degree of some sort or another beyond which our subjects could not be mobile. Even the subtotals, however, of college graduates indicate 31.7 per cent of the mothers with more education than fathers and only 28.8 per cent with less education than fathers. In this instance, given the large figures with which we are working, the difference here is significant and in our particular group we confirm the hypothesis that highly upwardly mobile young men will in general tend to come from homes in which the mother has more education than the father. We may note also, in passing, that this is a group of people from families in which the average education is quite high. The national median for fathers is 8.9 years of education for men in the range of 45 to 49 years of age, and the median education for mothers nationally is 9 years for for the same age group. We selected this particular age group for comparison because that would be normally the average age of the parents of these young men entering dental school. In our sample the median education for fathers is 11.25 years, and the median education for mothers is 11.8 years. Incidentally, with a sample of well over 6,000 mothers and fathers, even this small difference of a half a year in additional education for mothers probably will be found to be statistically significant, though there seems to be small point in running this kind of a test at this time.

Summary. The present paper has presented background and general findings on the entering dental class of 1958. We refer to this class as future dentists because within four to five years approximately 95 per cent of this sample will enter dental practice. We can summarize our findings in brief as follows:

1. Roughly 75 per cent of them are upwardly mobile in the occupational hierarchy.

2. Twenty-two per cent of them appear to be influenced to some degree to enter into their profession by reason of their father's profession, his professional status as a physician, or his professional status plus the fact that there may be a dentist elsewhere in the family, or that their father is not of professional status but there is a dentist in the immediate family. Thus, roughly 78 per cent of our sample can be seen as entering dentistry without any background of immediate familial influence.

3. Future dentists are seen as people who tend to attain far more

education than their mothers and fathers. On the average these dentists will be attaining roughly seven years more of education than their mothers and fathers. At the time of entering dental school they have already attained more education than 65 per cent of their parents. In fact, only about 7½ per cent of their parents will ever have the same amount of education as these students will have attained when they graduate as dentists.

4. We have tested the hypothesis that among a group of young men who have very high occupational and social mobility, as represented by status striving and status aspiration, the mother's education will tend to be more than that of the father. This hypothesis has been strongly confirmed for the total group and especially with respect to all parents with no more than high school education.

The indications presented here must be considered merely the first step in our analyses of these data. An enormous variety of factors remain to be analyzed, either by themselves or in conjunction with the elements indicated in this paper. Some of the aspects of our data have strong implications for counseling and guidance workers; some of them have very strong potentiality for testing a variety of questions regarding the psychology of occupations both at superficial and at depth emotional levels; and because of the remarkable homogeneity of the sample, as regards its occupation both at superficial and at depth emotional elevels; and because of the remarkable homogeneity of the sample, as regards its occupation characteristics, provides us with the opportunity of testing many sociological hypotheses within the data itself. These subtler analyses are planned for the near future. Certainly also the findings of this study and subsequent studies will have important bearing on the general problem of the utilization of highly trained personnel in our society. If, for example, we are to hope to maintain adequate dental care in the United States in the future, we necessarily must recruit into dentistry an enormously larger percentage of young men than are currently entering it. It already begins to appear inevitable that the dental profession will face a crisis in balancing between some opposing forces. On the one hand there is need to maintain high academic standards for entry into the schools and still attract a large number of people. Secondly, there seems to be no necessary relationship between motivation to enter dentistry and academic qualifications to perform in dentistry. Lastly, some of the motivations for

entry into the field are not precisely in accord with the currently published and accepted codes of ethical standards for the profession itself. All of these differences will have to be ironed out within the next decade in some way so that an effective program for meeting the ever increasing demands of the public for dental health services can be accomplished.

Choice of a Career in Dentistry

The decision to follow a certain vocation is one of the more serious choices a person ever makes. Rarely do people make an early, clear-cut selection of a highly specific occupation; generally they undertake training in a broad, diffuse area, such as business administration, mechanical work, or engineering. Only after some years of training and, ordinarily, tentative exploration of a field in two or three jobs do young people gradually sharpen their vocational interest. The trial work period ends for most men between ages thirty and thirty-five, and they enter a stable work career—say as a purchasing agent, a Diesel engine repair mechanic, or a ceramic engineer. Young entrants to the labor market have only a vague awareness of all the kinds of jobs open to them; thus, while they may move toward broad "job-families," they hedge their vocational bets by leaving open the possibilities for a considerable number of shifts and readjustments of vocational goals as they mature and gain in knowledge of the work world.

This situation is repeated even in the higher professions which require great investments of time, money, and emotions in years of advanced education. The varieties of jobs in business, finance, labor, and government that are open to candidates with legal training are so great that only about 50 per cent of men so trained ever practice law. Similarly, the young persons who early conceive a burning desire to become a physician actually find that the four years in medical school are heavily devoted to sensitizing them to what kind of specialized internship they will seek. Three-fourths of graduating medical students now move into some area of specialized practice.

From this perspective we can see at once that dentistry presents some sharp contrasts. Dentistry affords highly specific rather than diffuse vocational training. The opportunity to hedge one's vocational bet as he proceeds in professional school is narrow; that is, we may almost say, that dental training prepares a person only to be a dentist. Unlike medicine, law, engineering, or social work, only about 4 per cent of dentists enter distinct specialties. In spite of the anxieties expressed by students about completing their professional degree, medicine and dentistry are alike in that 95 per cent of entrants in both do complete. Expressed another way, once a person gains acceptance to a medical or dental school the risk that this voca-

tional choice will not pay off is extremely small compared with choices of the other possible professions.

Both medicine and dentistry explain their ability to graduate such a high per cent of entrants by pointing to the high standards for admission. These health service schools feel that this care in screening and selection assures them of student bodies in which virtually everyone is capable of becoming a physician or dentist. *Medicine and dentistry experience an applicant to entry ratio of about 2:1, less than law (3.2:1),* in which the freshman year drop out is 15 to 20 per cent! The argument for dentistry is weakened by our finding that nearly 39 per cent of those admitted to dental schools state they earlier preferred a career in medicine, and one out of every four has applied or attempted to apply to medical school and been rejected or dissuaded. The unavoidable inference is that dentistry recruits an insufficient number of high calibre applicants for the profession to be able simultaneously to maintain high standards and to grow.

With this preamble, we turn to some empirical findings on when students choose a dental career, and what outside influences helped stimulate this choice. Table 1 shows the frequencies of decision to enter dentistry for succeeding developmental periods. In spite of the occasional assertion that dentistry is a second or "last ditch" professional selection, we find that appreciably more decided on this vocation in high school, or earlier, than in college and after completing college. Recalling that most high school graduates have only

TABLE 1

PERIOD OF CHOICE TO ENTER DENTISTRY

Period	*N*	*Per Cent*	
Before 9th grade	361	10.1	
Early high school	553	15.5	46.2
Late high school	737	20.6	
College	954	26.6	
After college	193	5.4	42.8
In military	388	10.8	
Subtotal	3,186	89.0	
Left blank	392	11.0	
Total	3,578	100.0	

vague notions about job families they may wish to enter, this strength of early selection of a specific vocation is a striking finding. Seventy-four per cent of the class surveyed stated in answering another question that some dentist had given them counsel during high school, college, or while in military service to enter this field. Clearly, then, *one way to encourage more potentially qualified candidates will be to increase the breadth and intensity of personal contact by dentists with young people.* Aiding the dentist in this endeavor is the highly specific nature of the vocation as well as its many enticing features.

An apparently neglected area of recruitment is indicated in Table 2. Over twice as many dental students come from white collar homes

TABLE 2

FAMILY BACKGROUND

	White Collar		*Blue Collar*		*Total*	
	N	PER CENT	N	PER CENT	N	PER CENT
Early decision	1,178	37	473	15	1,651	52
Late decision	1,010	32	525	16	1,535	48
Total	2,188	69	998	31	3,186	100

as from blue collar homes. Even though the differences may seem slight in the table, statistical analysis indicates that significantly more of the white collar group tend to make an "early decision."

Most practicing dentists today come from white collar backgrounds; they communicate more easily with the young person from a similar home. Some men from blue collar families become superb mechanics, and this group contributes a heavy portion of persons to engineering. About half of our working population is in the blue collar group, and we must realize that the brains and abilities needed for dentistry are *not* distributed in our society according to fathers' shirt colors! To recruit young people from the blue collar homes, practicing dentists must make redoubled efforts to meet, talk with, and reach boys in this grouping.

Influence on Choice

We pass now to the question of who influenced the choice of a dental career. A number of checklists and open-ended questions in

the survey gave respondents an opportunity to mention some influence, other than personal motives, which stimulated choice of dentistry. Two checklists and four open-ended items contribute this kind of information. In the following it is important to realize that far more respondents are apt to check an item given for them than are apt to come up spontaneously with such a response on an open-ended item, which they must complete with a sentence or short essay. First we examine the checklists.

Item 46 in the questionnaire is: Factors influencing your selection of dentistry as a career: (Check as many as apply)

1. ——Discussions of dentistry at a career day at high school
2. ——Aptitude testing and counseling services of your predental college
3. ——The booklet, *Careers in Dentistry,* or similar publications
4. ——Desire to be my own boss
5. ——Interest in the content of the profession
6. ——Desire to work for and with people
7. ——Prestige of the profession
8. ——Monetary advantages of the profession
9. ——Desire to work with my hands
10. ——Better chance of getting into dental school than into school of my first choice
11. ——Because my own teeth are poor
12. ——Other (write in below)

The first three listings represent outside influences, and on the average only one person in five checked such an item (the combined total for 1, 2, and 3 reaches 61.3 per cent). On the other hand, 74 per cent checked listing 8 alone! Four out of five checked number 7, the motive of "Prestige of the profession," and even more checked number 6, "Desire to work for and with people." In brief, the influences of career days, testing and counseling, and literature about dentistry are seen as very weak influences by these students as compared with their own feelings and motives about the kind of vocation they desire.

The effect of personal influence on prospective candidates is seen further in this essay question: "I believe I was influenced in choosing dentistry as a profession. Please tell the story as to how you decided to come into dentistry, being specific as to events, causes, and people who had an effect on you." Ten lines were left open for a short essay response. In addition to mention of a variety of personal motives and experiences, the following people (or events) were mentioned by half of those answering as shown in Table 3. *Again the*

dentist is the outstanding individual who influences choice of a dental career. It is also of interest that 10.3 per cent mention the decisive nature of their experiences in military service. This closely parallels the 10.8 per cent who, on another item, said they made the decision to enter dentistry during the time they were in service.

TABLE 3

PEOPLE WHO INFLUENCED ENTRANT'S CHOICE OF DENTISTRY

	N	*Per Cent*
Dentists	815	45.5
Relatives[1]	490	27.3
Associates[2]	215	12.0
Military experiences	184	10.3
Instructors[3]	89	4.9
Total	1,793	100.0

[1] If parent or other relative is a dentist, he is recorded in the dentist category.
[2] Friends, acquaintances, and the like, especially those among dental students.
[3] Including high school and college counselors.

There are considerable variations among these responses from one region to another. Careful scrutiny of our data reveals, however, that these are not variations by geographical region, but are variations produced primarily by differences in philosophy and activity between individual schools. Only one general trend of a neglected resource, the use of the dental student body for vigorous recruiting, can be noted here for the following regions: North East, Middle East, South East, Central, and Far West. It is a definite possibility that more and better candidates could be obtained if student bodies in these regions exerted greater efforts to bring qualified friends and younger acquaintances into the profession.

Finally we turn to a lengthy checklist of factors which might have influenced choice of dental school. It read: Factors influencing your selection of the dental school which you wish to attend: (Check as many as apply)

1. ——I do not prefer any one school
2. ——My family dentist or another dentist whom I know
3. ——My father or another relative graduated from that school
4. ——The reputation of the university or college
5. ——It is near my home
6. ——It is in my state

7. ——It will cost me less
8. ——Because of my religion
9. ——My high school counselor
10. ——My college predental adviser
11. ——I selected it without much information
12. ——Contacts with dental students
13. ——Advice of parents
14. ——Study of school catalogues
15. ——I can get a job there
16. ——My wife can get a job there
17. ——My girl goes to school there

The percentages of responses to these items differed very considerably between United States, Canadian, and Puerto Rican schools, and on Item 8 between schools having religious or secular sponsorship. Table 4 exhibits these differences and indicates country totals and the grand total. Since the great bulk of all students (76 per cent) are in the United States' non-religious schools, they clearly dominate the over-all percentages in the grand total.

Although it deals with choice of dental *school,* Table 4 does permit us to see certain influences not elsewhere available. The highest mention is given, "The reputation of the university or college" (Item 4), a vague category conveying little definite meaning. Three items obtained more than 50 per cent responses: "5) It is near my home, 6) It is in my state, and 12) Contacts with dental students." Thus location and capacity to interact with students in a school are fairly powerful influences. *The influence of a dentist on choice of school is important* (but evidently much less so in Canada, and not at all in Puerto Rico). The cost of dental education is also important in the total; but, when religious preference is at issue, the relative importance of cost is diminished sharply.

That (3) father or another relative was an alumnus, and (13) advice of parents received some mention. But, these students felt that a comparative study of school catalogues was more often influential! Several other factors were mentioned less than one time in ten: Items 1, no preference; 11, selected with little information; and 15, 16, the possibility of work; or 17, a personal association.

It is evident that vocational counsel in high school (Item 9) is very unimportant. Once the actual choice of a dental career has been made, the influence of the college-level adviser on what school to attend increases rapidly (Item 10) over that of the high school-level counselor. We emphasize that this finding in no way indicates that

TABLE 4

CHECKLIST OF FACTORS INFLUENCING CHOICE OF DENTAL SCHOOL

Percentages within each column

Checklist Item	*United States*			*Canada*				
	NON-RELIGIOUS	RELIGIOUS	TOTAL	NON-RELIGIOUS	RELIGIOUS	TOTAL	PUERTO RICO	GRAND TOTAL
NUMBER OF CASES	2,716	604	3,320	176	51	227	31	3578
1. No preference	8.2	9.6	8.4	23.9	11.8	21.1	12.9	9.3
2. A D.D.S. influenced	42.7	39.7	42.2	23.3	21.6	22.9	0.0	40.6
3. Father or relative a graduate	12.1	11,1	11.9	6.3	19.6	9.3	3.2	11.7
4. School's reputation	85.1	80.6	84.2	66.5	82.4	70.0	32.3	82.9
5. Near my home	53.9	41.4	51.7	64.8	41.2	59.5	80.6	52.4
6. It is in my state	55.8	32.3	51.8	23.3	31.4	25.1	71.0	50.3
7. It will cost me less	40.9	13.9	36.0	36.4	13.7	31.3	64.5	35.9
8. Because of my religion	1.4	43.9	9.1	0.6	37.3	8.8	0.0	9.0
9. My high school counselor	1.1	2.5	1.4	3.4	3.9	3.5	0.0	1.5
10. My college predental adviser	15.0	20.5	16.0	4.0	13.7	6.2	29.0	15.5
11. Selected with little information	3.6	5.3	3.9	5.7	5.9	5.7	9.7	4.1
12. Contacts with dental students	53.5	51.5	53.1	40.9	47.1	42.3	25.8	52.2
13. Advice of parents	22.2	24.2	22.6	21.0	19.6	20.7	29.0	22.5
14. Study of school catalogues	34.1	28.3	33.1	17.6	27.4	19.8	12.9	32.1
15. I can get a job there	3.9	4.1	3.9	5.7	2.0	4.8	0.0	3.9
16. My wife can get a job there	6.9	7.3	7.0	5.1	0.0	4.0	0.0	6 7
17. Girl friend goes there	1.1	0.7	1.0	1.1	0.0	0.9	0.0	1.0

the college adviser influences choice of a dental career—merely the school selected after one is enrolled in a predental curriculum.

In summary of Table 4, we are again struck that the most important points of contact with the perspective candidates are dentists and dental students. Clearly, also, greater efforts must be made to enlist constructive aid in recruitment from counselors and teachers at both high school and college levels.

Summary

This paper has discussed a variety of influences on young people which lead them to dentistry. Several avenues in which further efforts could result in an improved quantity and quality of applicants have been suggested. The role of the practicing dentist is a central and powerful one, but he must make far more effort to recruit talent from the blue collar family background.

Bringing the full story of dentistry and its opportunities to the person of high school years—and doing this on a person-to-person basis—will be increasingly important in future years, because of the intense competition all professions are entering to gain the best young people they can.

The specific nature of a dental vocation (as contrasted with the vague, general nature of most others) is a distinct advantage in presenting this story to young aspirants. Finally, every effort must be made to recruit systematically through the student bodies of the dental schools. These young men who have "made the choice" are probably the most effective, enthusiastic persuaders of succeeding classes.

Some Motives for Entering Dentistry[1]

ABSTRACT

The importance of five aspects of dentistry in motivating choice of career is assayed with data from 3,578 entering dental students. The relative attractions in dentistry, as compared with other professions, of prestige, money, service, autonomy, and the opportunity to use manual skills are considered. Interviews with a third of the polled group support the conclusions that a patterned balance of these motives, and probably of others not studied, is needed to produce optimum interest in dentistry as a career and that the need for autonomy is central.

The reasons for choosing a vocation probably are fairly complex. A thorough explanation would require an intensive analysis of each individual's life-history to find not only the positive forces behind his choices but also why each potential alternative was not selected. In our study of survey data from a large sample of entrants to a vocation such detailed analyses were not possible; necessarily, then, our findings are incomplete and not applicable to every case.

Our alternative approach was to outline some apparent features of the occupation and then ascertain to what degree they attract persons entering it. The data on these points were gathered in a lengthy questionnaire completed by over thirty-five hundred students entering dental training in the fall of 1958. On the basis of past dental-school experience, roughly 95 per cent of this group can be expected to complete training and enter dental practice in the next four or five years.

Dentistry as a profession has some general features which are important in answering the needs of young people attracted to it. There undoubtedly are other vital features, but we limit attention in this report to the following list:

1. *Prestige.* The occupation carries the title "Doctor," and in the community at large it has high status.[2]

2. *Financial earnings.* The dentist in private practice generally en-

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[1] Reprinted from *The American Journal of Sociology*, Vol. LXVI, No. 1, July 1960, pp. 48-53. By permission of The University of Chicago Press.

[2] Cf. C. C. North and P. K. Hatt, "Jobs and Occupations: A Popular Evaluation," *Opinion News*, September 1947, pp. 3-13.

joys a good income, well above average and only slightly less than that of the most highly rewarded professional man—the physician.[3]

3. *Human service.* Dentistry directs its efforts in large part to the relief of suffering and dysfunction.

4. *Autonomy.* As a profession, dentistry permits great independence to members in their own activities. As with most other professions, the dentist's conduct as such is, within the limits of legal licensing, subject only to the jurisdiction of his professional peers. To a very considerable extent, the dentist can establish his own fees and the hours and conditions of his work.

5. *Manual skill.* Dentistry, since it requires a high level of manual skill and dexterity, offers satisfaction to those who have such talents.

Together, these five features of dentistry provide an initial basis for analyzing some attitudes of entering dental students toward their chosen profession. Within this scheme we will also observe how they rank dentistry compared with some other professions.

In the questionnaire a checklist of eleven items (with a twelfth write-in space) inquired of respondents "factors influencing your selection of dentistry as a career (check as many as apply)" (Table 1). Five of the checklist items are relevant to our analysis, and the remaining items are grouped under "outside" and "internal" influences as footnoted. We need to take special note here of the phrasing of the first item in the table, because as it stands it does not necessarily imply "human service" and could as easily apply to sales, waiting on table, or any other work involving a great deal of interaction with people. Likewise we must recognize that the desire to be one's own boss is only one aspect of autonomy.[4]

In Table 2 are summarized responses to an open-ended question about what the students would stress in advising a younger person, the assumption being that the respondent actually is revealing his own motives. The idea of satisfying one's own desires is most often mentioned. To a certain extent this is related to being autonomous, a point specifically covered in the sixth category. It is notable, how-

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[3] Median income for dentists seems to be in third rank behind physicians and lawyers (Bureau of the Census, *1950 United States Census of Population,* Bull. P-C1 [Washington, D. C.: Government Printing Office, 1953], Table 129, "Detailed Characteristics," pp. 1-279).

[4] For the definition of autonomy implicit in this study see R. F. Winch and D. M. More, "Does TAT Add Information to Interviews?" *Journal of Clinical Psychology,* XII, No. 4 (1956), 316-21.

TABLE 1

SOME FACTORS INFLUENCING CHOICE OF DENTISTRY AS A CAREER

Reason Indicated in Check List	*Checked*		*Not Checked*	
	N*	PER CENT	N*	PER CENT
Desire to work for and with people	3,201	89.5	377	10.5
Desire to be my own boss	2,998	83.8	580	16.2
Prestige of the profession	2,843	79.5	735	20.5
Desire to work with my hands	2,651	74.1	927	25.9
Monetary advantages of the profession	2,647	74.0	931	26.0
Other "outside" influences†	2,192	61.3	1,386	38.7
Other "internal" influences‡	3,146	87.9	432	12.1

* Total N = 3,578 in each row.

† Includes respondents to any of three items: (1) discussions of dentistry at a high-school career day; (2) aptitude testing and counseling in college; and (3) the booklet, *Careers in Dentistry*, or similar publications.

‡ Includes respondents to any of four items: (1) interest in content of the profession; (2) "because my own teeth were poor"; (3) "better chance of getting into dental school than into school of my first choice"; and (4) other (write in.)

ever, that the students seldom give first place to autonomy (2.45 per cent), prestige (2.23 per cent), money (1.89 per cent), or service (1.31 per cent). Having the necessary skills (which, in their thinking, may include manual skills) and possessing the necessary intelligence are both more often given first place.

The influence of prestige was checked as important in determining choice of the dental profession by nearly 80 per cent of our sample (Table 1). For the material reported in Table 3, respondents were asked to rank the six given professions as to "how you feel people in the community value [them]." The exact phrasing here is important because the underlying reasons why a student thinks of others as "valuing" a particular profession may or may not include the idea of the status or prestige of the occupation. He might see it as being "valued" because of the income it provides, its relative service to mankind, its power to control others, or a variety of other reasons. The assumption is, therefore, only partly justified that the relative rankings given in Table 3 are indicative of perceived relative occupational prestige. On this assumption we would say that the entering dental students see the dentist as having lower status than the physician and higher status than the lawyer. The prestige scores obtained

TABLE 2

RESPONSES TO ITEM ON COUNSELING*

Category of Response	*N*	*Per Cent*
Following one's personal interests, motives, likes, and desires	1,757	48.95
Aptitudes for the work; having the particular abilities it requires	395	11.01
The intelligence needed	321	8.94
Courses and grades needed	263	7.33
The need to begin early in life	127	3.54
Independence (autonomy) to do as one wishes in his work	88	2.45
Prestige; status the work confers on one	80	2.23
Financial rewards of the job	68	1.89
Serving others; wanting to work with people	47	1.31
Security (job tenure)	31	0.86
All other responses	269	7.49
Left blank	143	3.98
Total	3,589	99.98

* "If I were counseling a high-school senior about choosing the right vocation, I would stress these factors." Space for four comments was provided; only the first response is tabulated here.

by the National Opinion Research Center study by North and Hatt indicate much the same ordering, except that they found that dentistry and law were equal in prestige in the eyes of the general public.[5]

When the students were asked, "What other professions have you considered?" 38 per cent named medicine; 10 per cent, teaching; 9 per cent, engineering; 4 per cent, law; and less than 0.5 per cent, any field of social science. Similar results were obtained from the question, "If you could choose any career you wanted except dentistry, what would you choose?" Most often mentioned was medicine (39 per cent), second was teaching (7.5 per cent), and farther down the list were engineering (4.6 per cent) and the law (3.2 per cent), but social service was not mentioned. In effect, prestige is important, but the predominant choice is between medicine and dentistry. The other professions mentioned are seen as acceptable alternatives in such small percentages that they probably have not been accorded really serious consideration by the majority sampled.

[5] *Op. cit.*

TABLE 3

RANKING OF PROFESSIONS BY ENTERING DENTAL STUDENTS

Rank Assigned	*Physician*		*Dentist*		*Lawyer*		*Engineer*		*Teacher*		*Social Worker*	
	N	PER CENT*	N	PER CENT	N	PER CENT	N	PER CENT	N	PER CENT	N	PER CENT
1.	2,684	91.8	180	6.2	27	0.9	13	0.5	69	2.5	13	0.5
2.	193	6.6	2,079	71.2	437	15.2	99	3.5	121	4.3	19	0.7
3.	31	1.1	533	18.3	1,472	51.1	459	16.3	399	14.1	45	1.6
4.	4	0.1	107	3.7	549	19.1	1,361	48.5	604	21.4	178	6.4
5.	3	0.1	16	0.5	231	8.0	617	22.0	1,436	50.9	466	16.7
6.	9	0.3	5	0.1	163	5.7	259	9.2	193	6.8	2,072	74.2
Subtotal† ..	2,924	81.7	2,920	81.6	2,879	80.5	2,808	78.5	2,822	78.9	2,793	78.1
Missing†	654	18.3	658	18.4	699	19.5	770	21.5	756	21.1	785	21.9
Total	3,578	100.0	3,578	100.0	3,578	100.0	3,578	100.0	3,578	100.0	3,578	100.0
Mean rank ..	1.1		2.2		3.4		4.2		4.3		5.6	

* Percentages for ranks (1-6) are calculated from subtotals.
† Percentages for "Subtotal" and "Missing" are calculated from totals.

Table 4 reports on the students' conceptions of other goals. They were confronted with three statements:

1. "Dentistry provides opportunity for greater human service."
2. "Dentistry makes it possible to make money more easily."
3. "Dentistry as a profession offers the most independence."

Reading down appropriate columns in Table 4, it is clear that they regard the physician as contributing more and the lawyer and the

TABLE 4

ENTERING DENTAL STUDENTS' COMPARISON OF DENTISTRY WITH FIVE OTHER PROFESSIONS

Profession Compared	*Dentistry Provides:*	*Relative Opportunity for Human Service* N	PER CENT	*Making Money* N	PER CENT	*Autonomy* N	PER CENT
Law	More	2,468	71.9	1,086	31.0	1,986	58.1
	Less	310	9.0	1,861	53.0	658	19.2
	Same	657	19.1	563	16.0	777	22.7
	Subtotal .	3,435	100.0	3,510	100.0	3,421	100.0
Teaching ...	More	995	29.1	2,929	85.5	2,922	83.5
	Less	1,239	36.2	421	12.3	388	11.1
	Same	1,188	34.7	76	2.2	188	5.4
	Subtotal .	3,422	100.0	3,426	100.0	3,498	100.0
Social Work .	More	1,316	38.5	2,913	85.1	2,852	83.3
	Less	1,016	29.7	437	12.8	443	12.9
	Same	1,085	31.8	71	2.1	129	3.8
	Subtotal .	3,417	100.0	3,421	100.0	3,424	100.0
Engineering .	More	2,684	78.1	1,558	46.0	2,634	76.9
	Less	290	8.4	1,204	35.5	504	14.7
	Same	463	13.5	626	18.5	286	8.4
	Subtotal .	3,437	100.0	3,388	100.0	3,424	100.0
Medicine ...	More	141	4.1	426	12.5	1,689	49.4
	Less	1,507	43.9	2,011	59.0	549	16.1
	Same	1,783	52.0	970	28.5	1,178	34.5
	Subtotal .	3,431	100.0	3,407	100.0	3,416	100.0

engineer less to human service than their own profession. As to human service, opinion seems to be split uniformly when the students compare dentistry with teaching and social work. Strictly, they would see themselves in third place and behind teachers by a plurality among the six professions.

As to making money, the subjects clearly regard the physician and the lawyer as being ahead of them and the engineer, social worker, and teacher below them. The exact phrasing of our question leaves

some doubt here, for we did not ask about the relative *amount* of money earned but rather about the relative *ease* of making it. The allied questions of hours worked and effort expended per dollar of potential return may have influenced some respondents.

In relative opportunity to control one's own destiny in his career, the students definitely place dentistry first. Even the physician, who is seen as having higher prestige, making more money, and being of greater service to man, is regarded by nearly half the sample as having less personal autonomy than the dentist. In the interviews supplementing the questionnaire frequent mention was made of the physician's duty to make night calls, to serve in emergencies of all sorts, and to accept responsibilities not placed on the dentist. Many of those interviewed said that their final choice between medicine and dentistry was influenced by the desire to avoid such responsibility. Our data in the questionnaire do not permit us to distinguish the importance of autonomy as compared with avoidance of responsibility.

To the question, "Has previous success in using your hands in hobbies or mechanical work helped you to decide to apply for admission to dental school?" 63 per cent of the 3,459 who answered this item checked "Yes." To another item only 6 per cent indicate among their "fears about studying dentistry" that they really lack sufficient mechanical aptitude. Less than 3 per cent list a lack of the necessary manual skills as a reason why they think that people do not apply to enter dentistry.

The five motives here discussed clearly are not unique to dentistry; moreover, we have not delved into other, perhaps vitally important, aspects of the work. We have not, for example, looked here into compulsiveness—dentistry's demands for exactness in detail, care, orderliness, and cleanliness. Likewise, the intellectual demands in the study of dentistry surely may have attracted many students to it. If we were to parcel out the total "attraction" of dentistry among its many components, the five elements would in all likelihood account for an appreciable share, but there would remain without question a considerable "unexplained" variation.

It is something of a leap to assert that some overt feature of work motivates a person to choose a given occupation. This may not be the case for any individual in our study sample. A detailed study of the material summarized in Table 1 is being undertaken to determine what, if any, predominant patterns of features appear in the

items checked. These in turn are being checked against students' essays on reasons for entering dentistry. From the evidence reported here a predominating pattern can be deduced.

Although "desire to work for and with people" is a frequently selected item, its intensity as a possible desire for altruistic service is weakened by the extent to which conflicting motives are selected. However the apologists of business may argue, the motive of pure service is at least slightly incompatible with the acquisitive drive, with striving for prestige and status, and with insistence on being to a large extent independent of many of the usual constraints of occupations. To this degree, then, we may posit a built-in conflict among the patterned forces inherent in the requirements of the work. Part of training for dentistry is the student's resolution of such conflicts, at least partially. One common solution, though a debated one within the profession, has been to maintain a flexible fee-service system. For example, charging some patients modest to very high fees is justified, they believe, if the dentist gives time to low-cost clinics or accepts some partly charitable or "research" cases.

In Table 2 by far the largest group stressed "following one's own desires." This notion may include any of the other more sharply specified motives, but in a broad sense it implies a need to be autonomous and to become self-directing and self-gratifying in one's own actions.

The dental students' expressed unwillingness to follow directions imposed by authority figures, as would typically be required of company employees, may indicate some degree of inner-directedness. They do present some features in common with the small, independent entrepreneur. Mixed with this is a pronounced conformity in religion, politics, and memberships but some atypicality in marital pattern. Also the students and practicing dentists interviewed reveal a striking unwillingness to participate in aesthetic community activities or social betterment to the same extent as physicians and lawyers. As one respondent put it, "Sure, I want this status, but I'm not going to give up my free time to all these organizations that come around." They want to hunt, fish, and do workshop projects. In this sense they conform, but they do not conform to the role of public benefactor which is often ascribed to those enjoying the title "Doctor."

We can readily argue that prestige and financial independence are handmaidens to the more basic drive for autonomy: behavior alleged to satisfy one need may, in fact, be satisfying another. Ordi-

narily, the covert need will be less acceptable socially than the overt one masking it. In the present instance we see the service motive as the most obviously acceptable one for a person in a dedicated health profession. However, for the motives of status-striving, independence, and material acquisition, if kept within bounds, we also have strong positive sanctions: in our culture it is "right" to strive to get ahead,[6] to want material possessions,[7] and to seek maturity in outgrowing emotional dependence on others.

What draws the young man into dentistry must be seen as a complex pattern of motives, each of which may be related to a well-defined characteristic of the occupation. (We are not considering here some rather obvious influences, such as parental pressure or vocational counseling in high school and college.) Our main assertion is that, of the five motives considered here, the need for autonomy is the most decisive. None of the other four motives is unnecessary, but without autonomy they seem insufficient. Our interviews provided repeated evidence that entering dental students would accept a career with less prestige, less money, and less opportunity to serve than the physician's because dentistry would afford them greater independence.

Any campaign to enlist more applicants to dentistry could ill afford to ignore symbolic or even direct appeals to the possible candidates' desires for social status and occupational prestige, for financial return with concomitant material security, for the opportunity to give genuinely needed service to mankind, and for the chance to make creative use of manual talent. Above all, it seems necessary to point clearly to the potential of dentistry to provide practitioners with great independence in determining their own life-styles.

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[6] See, e.g., W. Lloyd Warner *et al.*, *Democracy in Jonesville* (New York: Harper & Bros., 1949), esp. chaps. i and xvi.

[7] *Ibid.*, pp. 294-95.

A Qualitative Summary of Student Reasons to Enter Dentistry

The immediately previous section has reported on motives to enter dentistry as these were revealed on checklists. Such lists provide the student with "ready made" answers, but none of the items offered is necessarily in the exact words the student would have used. Nonetheless, the easy thing to do is to check one or more of the given answers which seem reasonably close to the students' own attitudes. Rarely did these subjects write in their own statements in the blank provided at the end of the checklist. This kind of information reveals validly the motives and attitudes of subjects only to the extent that the designer of the questionnaire has skillfully provided appropriate statements. Some doubt always remains of the accuracy of checklist information when we try to assay fundamental aspects of personality.

On the other hand, some of our questions were of an essay type. The student could feel free to phrase his answers to these in any way he pleased. Because of this open-endedness, we can expect these essays to exhibit considerable variability and individuality. It is possible to code essay materials into many of the same categories used for checklist data. This process involves judgment and frequent interpretation of meaning on the part of the coder. In borderline instances the decision to code a statement in one of two possible categories actually may err in recording the "real" intent of the student who wrote it.

With these cautionary statements in mind we turn to three essay questions:

> A. "Dentistry attracts me as a profession because _____."
> B. "I believe that I was influenced in choosing dentistry as a profession. Please tell the story as to how you decided to come into dentistry, being specific as to the events, causes, and people who had an effect on you." (Ten lines were left open for this answer. We have reported in the section on outside influences regarding people and events mentioned in these answers. In this section we will deal only with personal motives and interests.)
> C. "The profession of dentistry represents for me a _____."

In tabulating responses to these we have been able to go beyond the limits set by checklists. For example, we were unable to distinguish in the checklist whether "Desire to work for and with

people" is selected because of its sociable implications or its indication of giving human service. In coding these free responses we have tried to distinguish these aims. Additionally, we have included tabulations of some motives not found elsewhere. These include such features as: creative (esthetic) interests involved in the cosmetic aspects of dentistry; desire for knowledge and understanding, the intellectual challenges of dental study; desire to limit one's hours of work; and personal dental problems.

Table 1 lists the percentages found in coding these essays for the categories of motives listed.

TABLE 1

MOTIVES TO ENTER DENTISTRY AS CODED FROM OPEN-ENDED ESSAYS

The Motive of:	*Percentage in Essay*[a] A	B	C
1. Service to people	31.9	5.6	33.1
2. Desire for money	32.1	4.4	29.5
3. Work with hands	19.3	11.0	3.1
4. Desire for prestige and status	26.1	3.4	18.1
5. Need for independence (autonomy)	14.1	5.0	8.2
6. Sociability	12.8	2.7	4.5
7. Knowledge and understanding	6.7	3.1	2.5
8. Limiting own hours	6.9	2.5	2.4
9. Creative—esthetic	3.6	—	1.7
10. Vague positive answers	25.6	—	35.6
11. Individualistic responses	9.0	9.1	—
12. Left blank	1.3	1.0	7.6

[a] Percentages do not total to 100 per cent because persons may have been coded in more than one category. In column "B" many responses not listed here are reported elsewhere.

The categories are listed here for the first 9 rows in order of total response to all three essay questions. It now becomes clear that the desire to help people is far more important in determining choice of dentistry than the social relationships involved in the work. Desires for money and working with one's hands here emerge as more potent than desires for antonomy or prestige, reversing the effect found on the checklist. Our main purpose, however, in this section is to bring the reader a sampling of the actual statements of the students. These we feel give life and meaning to the statistical summaries which numbers cannot convey.

In the following quotations, we will follow the order given in the table.

Service to others, nurturance:

"I chose dentistry because of the desire to help and serve people and my community."

"I decided to enter Dentistry because it is one of the healing arts and a public health program which can greatly aid society in keeping healthy and physically well off. If one has pain and can put his confidence in you to allow you to relieve that pain and you do it I think this is a great feeling of service and accomplishment."

"When we were children we had no dental care. This stressed upon me early in life the need for dentists. . . . A desire to aid people in a medical capacity."

"Because of the richness of a truly great service to humanity."

"Because of an opportunity to enter the battle against poor oral conditions among a large number of people."

"It offers an opportunity to be of help to people directly."

"I had poor teeth as a child and teenager and this is a chance to help others in the same situation."

"Because of the idea that I would be aiding and giving service to people. This idea is very gratifying."

Acquisition, desire for money:

"My father suggested it as a good profession because dentists make lots of money."

". . . practice with average or above average income."

"I talked with my dentist and got the financial view and opportunities and decided Dentistry was for me."

"It affords one a sound financial income."

"Provide a good income for my family in the years to come."

"MONEY."

"Means of provision for me and my future family."

"Good money."

Manual skills, desire to work with one's hands:

"My mechanical ability is encouraging."

"I like to work with my hands."

"Manual work is a necessary complement to a balanced life."

"My hands can be utilized and this is what I enjoy."

"It involves a specialized type of mechanics."

"I always liked to work with my hands, making things or fixing things."

"My hands were the biggest factor."

"I have a good sense of manual dexterity."

"I also enjoy very much working with my hands, whether it be work on my car, radio building, photography, or doing lab work in my father's office."

Desire for status and prestige:

"Because it affords an acceptable place in society."

"I just became sincerely interested in Dentistry through visits with the family Dentist. He is well respected in the community."

"I felt it was one of the professions where I could hold such a high place in the community."

"Most dentists are highly respected members of their community."

"It is a profession which is respected as the members are known to render a great service to society."

"It (dentistry) yields considerable prestige."

"Being looked up to by laymen as a *professional man* because of the ability to help others."

We need to note that some of these statements mention respect and prestige as a goal, but they also imply this must be earned through genuine service.

Desire for independence, autonomy:

"I wanted an independent way of life, probably as a result of my life on the farm, but I knew I would not make a successful farmer."

"Since my father is not his own boss, I see the difficulty of working for someone."

"I was influenced in choosing dentistry because of watching persons who worked for others. I saw the limitations of their life and the opportunities presented to them."

"I like the profession because you are your own boss and do not have to depend on other people to do your work for you."

"I will work for myself and also have much personal freedom."

"It lets a man practice without an overseer."

"It offers an independence from bosses."

"I will be my own boss with no overseer."

"You are your own boss and can work at your own discretion."

Sociability, work that involves interaction with people, need for affiliation:

"I like to be with and work with people."

"I was also very interested in a profession which would allow me to work with and help people."

"The idea of meeting new people, children and adults, and being able to service their needs by doing constructive work thoroughly convinced me."

"I enjoy the different people I can meet."

"It gives opportunity to meet many different kinds of people."

"Because of its contact with people and I like working with people very much."

"There is opportunity of meeting people every day."

"Mainly the chance to work with people of the same interest."

(Note that some of these also involve the idea of helping others.)

Desire for knowledge and understanding, intellectual challenges, cognizance:

"I have always had an interest in science courses in school. So I decided on a career in the field of science which happened to be medicine."

"I have always been interested in a profession which offers opportunity to pass useful knowledge to the public."

"The main reason is the fact that I have always been interested in the physical aspects of the human being. Dentistry gave me a chance to learn about the body and to also learn a profession."

"My concern with the problems of a chemical and biological nature attracted me to the healing arts."

"It is a favorable challenge to my mind."

"It offers the opportunity to a person to become a greater thinker."

"Because of its scientific alliance."

"Because of the need for research within the field."

"I have a great love for science."

Capacity to limit one's hours of work (This is actually a special aspect of being independent, and autonomous):

"Both parents teach school. Frequently I arrived home before they did and waited for them. This occurred in 7th and 8th grade. It struck me how nice it would be if my Father was a dentist. His hours would have been shorter."

". . . and set my own hours. I wanted to be free for other activities such as church and community affairs."

". . . good life he leads (dentist)—easy hours, sufficient time for recreation and pleasure."

". . . go into Dental School to lead a better life and not kill myself."

"Because of regular hours—no night calls."

"It has the advantage of being able to set own working hours."

"Because of more time to spend with family."

Creative and esthetic desires:

"It gives the opportunity to improve an individual's esthetics as well as his general health."

"Artful work."

"I like working and creating useful things."

"I feel that I will enjoy doing creative work and seeing what I have accomplished."

It is our feeling that even the small sampling of statements we are able to give here presents the basic reasons why students select dentistry in far greater force than our statistical summaries. These comments were extracted during the coding simply as representative of the given categories.

In addition to the above material, on essay B alone we found 8.8 per cent mention that dentistry was a second choice. Samples of these kinds of statements are:

"I was becoming dissatisfied with the caliber of people being turned out as teachers. I felt I did not want to be a part of a profession that required so little. Several of my close friends were Dental Students and their enthusiasm convinced me to become a Dentist."

"It was a second choice the first being Medicine. Since I became ill in the School of Medicine I dropped out."

"I was not accepted to a medical school; so the closest thing to the field of my choice was dentistry."

". . . perhaps I should enter a course which had an easier life than medicine. Despite warnings by my Dentist that I would find the work boring and that I would be better off in Medicine I applied."

"After the first two years of College, my interest in medicine with all its gory scenes and hospital odors was on the decline. I considered teaching English, but this held no great appeal, and I still felt that I wanted to work with my hands. Dentistry seemed an ideal compromise for a "sometimes scientist" who liked manual labor and still wanted time to read his books."

Finally, again on essay B alone, we found 5.2 per cent mention of personal dental problems.

Summary

The strongest motive these students state to enter dentistry is a general desire to be of service to one's fellow man in the field of health. In addition to this motive we find a complex array of other desires—for money, for status and prestige, to express one's manual skills, and to be independent of outside forces in determining one's hours and conditions of work. Of lesser importance, but still worthy of note, are interests in the social interactive nature of dental practice, the intellectual challenge of the profession, and opportunity for creative expression. Not one of these motives is in any sense basically undesirable; any one of them if emphasized to an extreme can lead us to misjudge the nature of forces operating to bring young people into this field. It is the particular pattern and balance of this total complex of personal drives that distinguishes those who enter dentistry, and they in turn especially suit him to this vocation.

Personality Patterns of Entering Dental Students

In the following we will describe some common personality features of entering dental students. We exercise caution in generalizing from such a composite portrait of students to the practicing dentist; significant changes in this picture could easily take place as a result of experiences in professional school, and, later, from facing the realities of practice. Each mature dentist reading this is apt to find some statement about which he can say, "But, I'm not like that, and I don't know any dentists who are!" This is likely to be entirely true, but we hope the reader now warned will not judge the validity of our portrait against himself and his personal acquaintances. A composite drawn from statistical summaries does not represent any one actual person, and, because of certain hazards in using numbers in this way, the portrait may contain some internally contradictory statements.

This paper is divided into four sections. The first deals with the student's identification figure, the person (or quality) he states as his model in life, and the kind of person he regards as most successful. The second section treats the student's concept of himself, both as he sees his positive qualities and his faults. The third and fourth parts deal with goals, aspirations, and desires, and with fears and anxieties.

Identification Figure

One of the most powerful influences shaping a person's life is that internalized ideal figure he carries in his own mind. This mental figure embodies his concept of the person he wants to be like, it acts as his self critic when he fails to meet its implied standards, and it defines for him the general action roles and emotional characteristics with which he wants to meet life, particularly in his interaction with others. By striving to act as this ideal image implies, he feels he can obtain from life those gratifications he desires—e.g., satisfactions of his motives, recognition from peers or society, and rewards and privileges attendant to successful performance.

We can easily trace the development of an ideal self as people mature. The person the small boy would like to be like is most often his father, or some glamorous, visible figure such as the policeman, fireman, or "cowboy." As young people pass through adolescence to young adulthood, the successful father continues to be a frequent identification figure, but also we find the addition of a wider range of occupational roles and increased subtlety of qualities attributed. Table 1 summarizes responses to two questions designed to obtain this kind of information from our dental students.

TABLE 1

A. "THE PERSON I CONSIDER MOST SUCCESSFUL IS ——."
B. "THE PERSON I WOULD MOST LIKE TO MOLD MYSELF AFTER IS ——."

Category of Reference	*A* N	*A* PER CENT	*B* N	*B* PER CENT
1. Dentist (named)	129	3.6	408	11.4
2. Physician (named)	61	1.7	105	2.9
3. An intelligent, well-educated person	77	2.1	31	0.9
4. Father	358	10.0	971	27.0
5. Other family member	97	2.7	233	6.5
6. Self-reference	14	0.4	71	2.0
7. "Well-adjusted, happy people"	1,271	35.4	113	3.1
8. Famous and leader types	144	4.0	132	3.7
9. Great religious figures, and person of high moral quality	308	8.6	249	6.9
10. People who strive, achieve success	645	18.0	71	2.0
11. "No one," "don't know," left blank, miscellaneous others named	474	13.2	1,194	33.3
Totals	3,578	100.0	3,578	100.0

Table 1 is arrayed in three groups of categories, representing named persons in the first 6 items, qualities or traits in numbers 7 through 9, and idiosyncratic or avoidant answers in items 10 and 11. Question B is far more closely related to the concept of ideal model than is question A. These students frequently named some quality in responding to the stimulus "most successful," but rarely named a quality in response to question B. It is of considerable interest that the notion of success is far more frequently associated with "happiness" than with hard work and achievement.

As is characteristic of most studies of identifications (for men), the father emerges as the most important named figure. That a particular, named dentist is second in this group again emphasizes our frequent conclusion regarding his focal position in recruiting. The young man's personal contact with and admiration for a particular dentist may be seen as a central influence on choice of career in dentistry.

The flavor of responses to these items can best be illustrated by some direct quotations from the categories on great religious figures, famous leaders, and the three qualities of happiness, achievement, and intelligence. The remaining categories are self-evident or trivial.

On religious figures: frequent references are made to "Jesus Christ," "Schweitzer," " my bishop (priest, minister, pastor)."

On famous leaders: a wide variety of persons are named, especially "Eisenhower," "Salk," "Ralph Bunch," "Robert E. Lee," "Leonardo da Vinci," "Abe Lincoln," "Lord Beaverbrook," and "Castro" (we must remember here that the questionnaire dates from 1958).

On happiness and adjustment: "One who is happy and has lots of friends," "One who has sufficient and is happy with it," "A man who is happy in life," "The well-adjusted one," "A hard working, happy person," "One who is at peace with others and himself."

In addition, a variety of responses placed in this category contained some reference to achievement, but we felt the emphasis was on happiness. For example: "The happy professional man," "A man who accomplishes his goal and is happy," "One who is happy in his work and has reached the top in his field." These responses are by no means as sharply focused on goal attainment as those we coded under achievement.

On achievement, striving for and attaining success: "A person who got what he went after," "He who achieves what he sets out to do," "A man who starts from the bottom and makes his way to the top through hard work," "The one who rises to the top in his profession," "One who knows what he wants and strives to get it, hurting as few people as he can getting it." There were also frequent references to, "The successful dentist (in the community)."

On intelligence and education: "An educated person," "Einstein," "Aristotle," "The intellectual," "One who has learned a great deal

about something and has used it to advantage for himself and others."

Our over-all impression of the self identity expressed by these young men entering dentistry is one of normality and sound acceptance of the core values of our society. There is, commonly, a sense of identity with the father, and substitute "father-leader figures." Similarly, there is a strong current of acceptance for basic moral values, and for such societal values as happiness, good personal adjustment, occupational achievement, and occupational role identification. In view of the requirements of dental education, perhaps we may discern less emphasis on intellectual attainment than might be desirable for the total development of the profession.

The Dental Student's Self-Concept

In this section we report the trends found in 5 open-ended items related to positive and negative aspects of self-evaluations. It must be remembered that close analysis of an individual record would reveal a far more sensitive personality picture. Here we can treat only gross findings from the total group. The most striking result is the commonness, or stereotypy of responses. In each of these tables it may be noted that the 11 punch positions available on an IBM card easily encompass more than 90 per cent of all answers given. Or, to reverse this point, the extent of genuine individuality expressed is rare. One implication of this is that these students are predominantly conforming and conventional in their attitudes. They will tend to accept the status quo, will prefer safe, established methods, and will avoid questioning the validity of authority. We cannot expect much interest in research and innovation from this type of a student population. This point is specifically covered in two later items in the questionnaire. To "My feeling concerning people who do research as a profession is one of. . . ," the characteristic response is "respect." But, to "My own feeling about doing research is. . . ," they tend to answer "It's not for me," "I don't have that kind of brains," and "It doesn't pay enough!"

Tables 2 and 3 represent aspects of the individual and his accomplishments that are seen in a positive light. In Table 2 it is readily seen that the outstanding theme is sociability in interpersonal relations. In fact, categories 1 and 3 through 8 essentially represent variations on this theme, the major ways a person secures

TABLE 2

"PEOPLE LIKE ME BECAUSE I AM ——"

Category of Response	*N*	*Per Cent*
1. Congenial, friendly, get along well	1,504	42.0
2. Honest, fair, sincere, reliable	419	11.7
3. Considerate, helpful, listen to them	349	9.8
4. Happy, cheerful, pleasant, easy-going	265	7.4
5. Tactful, tolerant, accepting of them	221	6.2
6. Good, nice, a "regular guy"	141	3.9
7. Have a good sense of humor	127	3.5
8. Amusing, entertaining	88	2.5
9. Ambitious, hard-working	36	1.0
10. All other responses	254	7.1
11. Left blank	174	4.9
Total	3,578	100.0

social acceptance in our society. Most of these categories refer to specific techniques with which the person can relate himself positively with others. There is a striking lack of emphasis on the underlying values of enterprise (only in 2 and 9 is there some such reference). This is not surprising, for it is consonant with observations from many sources on the changing attitudes of young people today away from entrepreneurial values to those of emotional security in groups, integration through cooperativeness rather than competition. The picture presented in Table 2 is of a young man who thinks of himself as (and who probably is) a mild, pleasant, likeable individual.

Table 3 refers to those incidents in these students' lives from which they take pride, which contribute to their self-esteem. The emphasis shifts strongly to features of their occupational orientation. Gaining entry to dentistry, a good scholastic record, and preparation for a career, together account for almost 43 per cent of the answers. The competitive element receives some emphasis in these responses; items 4, 9, 10, and 11 account for 18.5 per cent of responses. The second item, on gaining scholastic honors and making good grades, probably also contains some underlying pride in winning, or excelling, in a competitive system. Category 9 responses, for example, include winning speech, debate, and music contests, and essay and poster work.

TABLE 3

"I AM PROUD OF THE TIME I ——"

Category of Response	*N*	*Per Cent*
1. Got into dentistry	630	17.6
2. Graduated, made good grades, or honors	547	15.3
3. "Did well" and similar vague responses	539	15.1
4. Achieved success in sports (any)	411	11.5
5. Spend preparing for a career	354	9.9
6. Gave service (church), or helped someone	344	9.6
7. Accomplished (something) in military service	186	5.2
8. Got married, first child born, and similar references to family of procreation	126	3.5
9. Competitive successes other than sports	119	3.3
10. Asserted self (against authority or odds)	79	2.2
11. Attained a social success	52	1.5
12. Left blank	191	5.3
Total	3,578	100.0

Table 4 indicates some of those factors that these students see in themselves as potential areas in which they need support, or are sources of support to them in their endeavors. Of particular importance is an undertone of self-confidence and independence that we see rarely in other questionnaire materials. These students tend,

TABLE 4

"I DEPEND A LOT ON ——"

Category of Response	*N*	*Per Cent*
1. Myself (and self qualities), no one	1,012	28.3
2. Friends, my group, other people	652	18.2
3. Wife (or girl friend)	504	14.1
4. Parents, family (including in-laws)	421	11.7
5. Memory, experience, intuition	182	5.1
6. Money, my car	117	3.3
7. Work, being busy, hard study	101	2.8
8. Father (and grandfather)	51	1.4
9. Mother (and grandmother)	31	0.9
10. Food, drink, smoking	16	0.5
11. Other responses (including God, luck)	325	9.1
12. Left blank	166	4.6
Total	3,578	100.0

in very considerable proportion, to regard themselves as a source of their success. In this category we would include those responses under items 1, 5, and 7; all of these are particular qualities that the individual brings to his work or his career studies, and on which he sees his future success as being dependent. For example in category 1 we frequently got responses, "I depend a lot on, 'My ability to stick to a problem or a project until it is done,' " and similarly. Likewise, in categories 5 and 7, they refer to their personal qualities of work, hard study, keeping busy, experiences they have had in the past, ability to remember things, or to understand things as being fundamental properties that will aid them in the future. There is a category, second in frequency, which illustrates again the strong trend toward getting along well with others around them. Being sociable and congenial are factors noted previously in Table 2. This table also shows the need to depend upon the immediate kin group, as seen in categories 3, 4, 8, and 9. These four categories added together account for 28 per cent of the total number of responses tabulated here. Among the responses categorized in item 11, there is no single response that totaled more than 1 per cent, and none of these was sufficiently clear to make it into a separate category such as those referring to the oral needs of eating, drinking, and smoking. We separated item 10, particularly, because it referred to oral activities and we wondered to what extent this might appear in a person who would make the mouth the subject of his life's work. It is quite interesting that there was only a very low response in this particular area.

In Tables 5 and 6 we deal with two open-ended sentences in which the individual might easily have made some kind of negative evaluation of himself. In Table 5 there was a good opportunity to avoid making a negative evaluation of one's own person by the kinds of responses to category 1, specifically, those things that other people do that the individual did not do himself and for which objectively he could not be blamed. This particular way of avoiding negative evaluation of one's self is selected by a very considerable plurality of all our respondents. There is, however, another group of people who avoid blame in almost all kinds of ways, by pushing it off of themselves, even when objectively they have been at fault or in error. Note in this instance category 2, "One's own faults, his errors, his failures in some performance or another to come up to

TABLE 5

"I DON'T THINK I SHOULD BE BLAMED FOR ——"

Category of Response	*N*	*Per Cent*
1. What others do (what I did not do)	1,313	36.7
2. My faults, errors, or failures	358	10.0
3. The kind of person I am (my mind, body, appearance, attitudes)	340	9.5
4. "Everything," "anything," and similarly	332	9.3
5. What I do (how I perform, my grades, etc.)	291	8.1
6. Things beyond my control (e.g., "the world situation," "national politics")	223	6.2
7. All other responses[a]	234	6.6
8. Left blank	487	13.6
Total	3,578	100.0

[a] Including such responses as laziness, loafing, not trying, being slow, being harsh or blunt, uncommunicative, and other idiosyncratic comments.

some requirement or expectation," and in category 5, "What I do, in particular how I perform, my grades in school, etc." Over 18 per cent of the respondents fall into these two categories. Category 3, "The kind of a person I see myself as being," and the rather vague, inclusive comments in category 4 also are avoidant of a specific self-blame. Category 6, similarly, might be considered as placing the blame on things outside the person, in either very large, generalized, or abstract ways, as contrasted with the specific ways in which other people performed improperly and the person was unjustly blamed, as indicated in category 1. The widely scattered responses in category 7 were, in many cases, of a rather amusing nature. One for example was—I don't think I should be blamed for, "Burning the beans," another indicated, "The Chicago fire."

It is when we turn to Table 6 that these individuals found it rather difficult to avoid picking out some specific thing about themselves to mention as a fault or difficulty. In view of the high pressures on these students to achieve in a professional career through higher education we immediately see that a great deal of their self-concern and self-criticism is directed toward this area. Categories 1 and 2 refer, in many of the specific responses, to studies that these men are undertaking in dentistry itself. These two categories account for nearly 43 per cent of all responses to this category,

TABLE 6

"MY WORST FAULT IS ——"

Category of Response	*N*	*Per Cent*
1. Being forgetful, slow to learn, stupidity	877	24.5
2. Laziness, procrastinating, wasting time	659	18.4
3. Lacking self-confidence, being shy	357	10.0
4. Joking, swearing, other verbal inappropriateness	345	9.6
5. Being depressed, worried, withdrawn, feeling inferior, anxious (including drinking)	275	7.7
6. Expressing impatience and temper	260	7.3
7. Being selfish, stubborn, inconsiderate, undependable	205	5.7
8. Being dominative, conceited, demanding recognition	150	4.2
9. Being sarcastic, critical, hostile	141	3.9
10. Being untidy, sloppy, lacking order	118	3.3
11. "None," "have none," "don't know," and left blank	191	5.4
Total	3,578	100.0

and it is obvious that they do refer to the underlying career aspirations involved. Of the remaining categories in this table we can see two general trends. Categories 3, 5, and 10 tend to refer to qualities that the person sees in himself internally. It is probable that these types of responses—lack of self-confidence, shyness, being untidy and disorderly, being depressed, worried and withdrawn, feelings of anxiety—refer to the individual's self-evaluation against his own established standards, values, and ideals. These internally directed responses account for 21 per cent of the responses here. The remaining categories, 4, 6, 7, 8, and 9, refer to modes of action the person has toward people around him; they refer to factors in social and interpersonal interactions. In one way or another each of these categories implies some kind of an expression of outer hostility toward other people or the placing of unreasonable demands on others. This seems related to the underlying concern of these students about their impact on others in a social sense.

In this second section in surveying some of the personality patterns of those students entering dentistry we have concerned ourselves with the students' self-concept; both in a positive and negative sense. We have an over-all impression of a fairly normal individual, one who is concerned to get along well with people around him, who is congenial and pleasant; but who, at the same time, has

some inner core of self-confidence, a feeling of independence that he wants to express through his career. This is a person who has accepted the fundamental values of our society in desiring to achieve an honorable career through his work. He is not without some concern about potential areas of inadequacy within himself, and his concern in this regard is directed most strongly toward qualities that would be detrimental to his aspiration for a career in dentistry.

Wishes and Desires

Table 7, 8, 9, and 10 were open-ended questions in which the individual expressed one or another of his dreams or wishful thoughts, or something of that nature. The kinds of things that we were asking for here were what the person enjoys doing that will give him pleasure, both thinking about and contemplating, planning for, and actually carrying out. In the final table we invited them to express their attitudes about what they would like to do if they had an absolutely open chance to carry out anything they wished.

Tables 7, 8, and 9 represent situations in which we require a respondent to express some of his wishes, desires, interests, beyond the immediate present. In particular, these three tables indicate areas in which we might expect some expression of plans for long-range development of one kind or another. There are some general

TABLE 7

"I ENJOY THINKING ABOUT ——"

Category of Response	*N*	*Per Cent*
1. The "future," and similar vague responses	1,091	30.5
2. Sex, dates, marriage	661	18.5
3. Work (especially dentistry, studies, career)	423	11.8
4. Sports (all kinds)	303	8.5
5. Pleasant special events	258	7.2
6. Philosophy, religion, "ideas"	228	6.4
7. Home, house, family (present or to come)	172	4.8
8. Travel, vacations	143	4.0
9. People and motives (vague generalities)	123	3.4
10. Challenging projects, goals, aims	59	1.6
11. Driving, flying, cars, mechanical gadgets	45	1.3
12. Left blank	72	2.0
Total	3,578	100.0

TABLE 8

"I ENJOY PLANNING FOR ——"

Category of Response	*N*	*Per Cent*
1. The "future," and similar vague responses	1,371	38.3
2. Travel, vacations	581	16.2
3. Parties, picnics, social events	419	11.7
4. Dentistry ("my practice," etc.)	380	10.6
5. A home or house, building a family	263	7.4
6. Sports, games, recreation	168	4.7
7. Heterosexual activities (marriage, dates, etc.)	157	4.4
8. "Weekends"	95	2.7
9. Goals, aims, challenging projects	47	1.3
10. All other responses	37	1.0
11. Left blank	60	1.7
Total	3,578	100.0

TABLE 9

"I ENJOY CARRYING OUT ——"

Category of Response	*N*	*Per Cent*
1. Plans, wishes and similar vague responses	1,371	38.3
2. Assignments, duties, responsibilities	602	16.8
3. Orders, directions, instructions	374	10.5
4. Challenging or difficult projects	270	7.5
5. Tasks, chores (e.g., "carrying out trash")	220	6.2
6. Ideas, goals, objectives	199	5.6
7. Services to others	96	2.7
8. Social plans	61	1.7
9. All other responses	202	5.6
10. Left blank	183	5.1
Total	3,578	100.0

trends in these three tables that we can remark on at once. The greatest bulk of our respondents tended to indicate a lack of specific planning, of programming, thinking, and carrying out by the frequency with which they resorted to such responses as just, "For the future," and similar vague responses. In each of these tables this particular type of response is the one of greatest frequency by a considerable margin. The second trend is those responses relating to relationships with members of the opposite sex.

This is in second frequency of things they enjoyed thinking about; seventh in frequency in making plans, but did not occur in Table 9. We need to caution that when we refer to "sex" and "heterosexual activities" we in no way wish to imply that these were crude responses at all. We use this category simply to refer to interest in establishing and maintaining positive relationships with members of the opposite sex in whatever way this might have been mentioned by the respondents. A third trend in this table refers to the work area, especially dentistry, the studies and activities surrounding one's career. This was in third place of importance in Table 7, in fourth place in Table 8, but when we come to Table 9 references to dentistry were scattered in several of the categories. Table 9 in category 2 provided many references to dentistry as regards assignments, duties, and responsibilities in the work; category 4, "Challenging or difficult projects," included projects in their educational work; and, category 6, "Goals and objective," frequently included completing their career studies and programs. Several of the categories in Tables 7 and 8 referred to pleasant, sociable activities and recreations—parties, picnics, sports, special events, travel, vacations, etc. These particular types of recreational and social responses rarely occurred in answering the question tabulated in Table 9. The only kind of response of gratification about social activities was in eighth place in Table 9, accounting for less than 2 per cent of the responses. There is clearly a difference in their thinking and responding to the idea of enjoying carrying out something, as opposed to "Planning for" and "Thinking about." In carrying out something, virtually all responses that could be seriously categorized refer to some kind of challenge or barrier, set assignment, something to be accomplished in the sense of work or working hard at it. With the exception of references to dentistry these kinds of expressions occurred very rarely in Tables 7 and 8—category 9 in Table 8 and category 10 in Table 7 accounting for less than 2 per cent of the total responses. Consequently, in spite of the fact that many of the responses in Tables 7 and 8 can be thought of as serious minded responses, there is, all in all, in these two tables far more of a trend of general pleasure and interest than we find in Table 9. Table 9 refers to a kind of an attitude in which they are definitely focusing on achievement of one variety or another. We need to caution in looking at these three tables that interpreta-

tions about their general meaning are watered down considerably in view of the large proportions of the respondents who use a vague or indifferent response to each one of these three.

Passing to Table 10, "If I could spend my time anyway I desire I would like to. . . ," we find a somewhat different approach. There

TABLE 10

"IF I COULD SPEND MY TIME ANY WAY I DESIRE, I WOULD LIKE TO ——"

Category of Response	*N*	*Per Cent*
1. Travel	803	22.4
2. Sports, active recreation	788	22.0
3. Work, study (especially dentistry)	576	16.1
4. Sedentary recreation (including "sleep" and "loaf")	513	14.3
5. Not change anything	270	7.6
6. Any creative response, e.g., paint (art), write, play music	133	3.7
7. Marriage and family	93	2.6
8. Socialize (including "picnic")	71	2.0
9. Any sexual response	57	1.6
10. Do research	39	1.1
11. Be autonomous, e.g., "be my own boss"	14	0.4
12. Blank, "don't know"	221	6.2
Total	3,578	100.0

is wide scattering of responses here, but the great American sport of traveling, in the sense of travel, vacation, and seeing various parts of the country or the world, is the most frequent response, followed closely by a category involving all kinds of active sports and recreations.

In third place is an interest in their studies and work, surrounding the field of dentistry and their career activities. There were many categories virtually self-explanatory. We found it particularly interesting that a small group, in sixth place, did refer to an interest in creativity of one kind or another. Although this represents only a small percentage of total respondents, it occurs in answer to this particular question and we feel it is worth emphasizing that it does occur here. Perhaps we might regret that we do not find a higher percentage of people who express creative interest of one kind or another. We might also regret that the response about research,

category 10, is similarly so very small. In this table we were able to separate those responses concerning marriage and family, wife and children, etc., from those that referred to heterosexual interaction of a more direct and immediate kind. We found some responses of the nature categorized in 11, "The desire to be autonomous, or to be one's own boss." This is a very small frequency, but we have pulled it out separately because, in tabulating our checklists and the types of essay responses in other papers, this desire to be autonomous has been frequently stressed.

In summarizing our over-all impression of the goals, wishes, desires, and interests seen in these four tables, again we have the feeling of a generally bland, pleasant personality. The average young man entering dentistry is by no means an unusual, strange, or eccentric person. In the main his response in this general area of life is positive, sociable, work oriented, directed toward various pleasures and gratifications, and constructive activities of one kind or another.

Fears and Anxieties

On three of these incomplete sentences we have assembled some evidence regarding those aspects of life that our entering students see with fear or anxiety one way or another. The first of these, Table 11, specifically centers the question on what fears they might

TABLE 11

"IN STUDYING DENTISTRY, I FEAR ——"

Category of Response	*N*	*Per Cent*
1. Lack of mental ability (often to pass specific difficult courses)	612	17.1
2. Nothing, "had none"	542	15.2
3. Failure, "flunking out"	300	8.4
4. Lack of self-confidence	290	8.1
5. Statements indicating vague, generalized anxiety	218	6.1
6. Lack of mechanical aptitude	208	5.8
7. Financial problems	118	3.3
8. Lack of time to study	36	1.0
9. Learning one really dislikes the work	33	0.9
10. All other responses	225	6.3
11. Left blank	996	27.8
Total	3,578	100.0

have regarding dentistry itself. The greatest proportion of these responses which indicate fears directed toward their studies center in a potential lack of mental ability, failure of specific courses, flunking out, etc. We might add to these, category 8, "The lack of time to study," indicating that studies are seen as requiring definite allocation of time. Lack of mechanical aptitude is feared by only about 6 per cent of this group. In view of the fact that they have had to pass rather stiff examinations in mechanical aptitude in order to be admitted to dentistry, it seems reasonable that this very small percentage is remaining. It is not at all implausible, and it might be of interest in the future to learn whether this particular 6 per cent are, in fact, some of those who had their lowest scores on the mechanical section of the aptitude tests for entry. It is well worth noting that in the second category, 15 per cent of our respondents indicated that they had no particular fears. The possibility that particular temperament traits, personal feelings of anxiety, and lack of self-confidence might be the greatest detriment to them in studying dentistry is expressed by about 14 per cent of these respondents. Financial problems are mentioned by only slightly more than 3 per cent. We have entered here category 9, "Learning that one really dislikes the work," because this came out rather clearly as a response to a different category reported elsewhere, concerning the important reasons why more people do not apply for dentistry, in which over 5 per cent indicated they felt that people did not enter dentistry because they had a basic distaste for the work. By comparison very few of these students feel that this is a potentiality in their own case.

Table 12, "The reason most people don't get ahead is. . . ," is included here as reflecting the dental students' concerns, because it is our experience, psychologically, that in answering such questions most people really project in their answers their own personal feelings, rather than make simply an objective analysis of others. The general concern exhibited in this table is with respect to work itself. These students feel that hard work, self-application, drive and motivation, planning, are those qualities that they need to have in themselves in order to succeed. They feel that if they do not get ahead it is probably these kinds of things that will prevent them.

The final table in this section, Table 13, "Debt is. . . ," is included in this section on fears and anxieties of students primarily

TABLE 12

"THE REASON MOST PEOPLE DON'T GET AHEAD IS ——"

Category of Response	*N*	*Per Cent*
1. Laziness, don't work hard or apply themselves	1,324	37.0
2. Lack drive, ambition, motivation	846	23.7
3. Lack planning, or clear goals	201	5.6
4. They are contented as they are	196	5.5
5. They fear risk and failure, lack confidence	188	5.3
6. Lack of some needed ability	101	2.8
7. Lack of opportunities	83	2.3
8. Stupidity, unawareness, lack of intelligence	73	2.0
9. Indecisive, ambivalent, unstable	40	1.1
10. All other responses, including "don't know"	404	11.3
11. Left blank	122	3.4
Total	3,578	100.0

to illustrate how a student views his financial responsibilities. The cost of dental education is high; entering dentistry requires further investment in office equipment. It is of particular importance to note that approximately 30 per cent of our respondents view debt in a quite negative light, taking account of their concepts of debt from categories 1, 3, 6, 8, and 9. The other categories included by no means indicate as strong a feeling of anxiety or fear regarding financial burdens, either now or in the future.

TABLE 13

"DEBT IS ——"

Category of Response	*N*	*Per Cent*
1. "To be avoided" and similar responses	888	24.8
2. Unavoidable, inevitable, necessary	767	21.4
3. Evil, repulsive, a disease, hell	524	14.6
4. (An "economics" definition given)	356	9.9
5. Useful, good, all right	203	5.7
6. Answers indicating extreme anxiety	188	5.3
7. Moral, humanistic interpretations, e.g., "our duty to mankind"	177	4.9
8. A burden, hard to pay off	99	2.8
9. Annoying, embarrassing	92	2.6
10. All other responses	132	3.7
11. Left blank	152	4.3
Total	3,578	100.0

The "Most Common" Dental Student

We may look at the personality of the dental student in a general way by simply summarizing the most frequent meaningful responses from those open-ended questions. Again, although we will draw on our interview materials somewhat, we emphasize that no particular individual is apt to fit this statistically derived portrait. We paraphrase in the first person the way such a *typical* student might describe himself:

> The kind of person I regard as most successful is one who is happy, well-adjusted to our society, and who is troubled by few feelings of anxiety or tension. He has solved his personal problems and resolved his personality conflicts. I'm not sure I can become that kind of a person, and to be successful in dentistry I will try to model myself after my own father.
>
> Among the more important things in my life are my friends. It is personally very necessary for me to feel that I am well-liked, regarded as pleasant, sociable, and nice to have in a group. I don't want those around me to think I'm pushing, too eager and ambitious, or a grind at studies.
>
> Looking back over my life the greatest thing that has happened to me is being admitted to dental school. This means a lot, and it means I've had to achieve successfully in my earlier years in college and high school. Maybe I haven't always been number one in the things I've attempted, but generally I was well ahead of the average in my classes.
>
> The largest part of my success I attribute to myself. Of course other people—my father and mother, my wife, and others—have helped me when I have needed it. But, my own abilities (intelligence, skill, memory, perseverance, and industry) have been the essential factors in getting me where I am today. I do have some fears of not being able to get where I want to go, but actually I am self-confident and fairly sure I won't fail in dentistry.
>
> Life would be much easier and happier for me if it weren't for some of my bad habits. I am not really as smart as I want others to think I am. It takes a lot of study for me to get through dental school, but I can't force myself to do as much as I should. I put things off too long, waste weekends having a good time, and can't seem to stick to a well-organized plan in my work.
>
> Being accepted, liked, and given recognition by those around me is emotionally very important to me. This is so vital, I can't really relax and warm up in social situations the way I know I should. Because I feel tense, all too often I try to get attention by joking, teasing, sarcasm, and by trying to take over and run things in an informal group.
>
> I like to win, basically I don't like to share glory with others and maybe I'm not much of a "team" player. When others around me get ahead, I lose confidence, get depressed, get feelings of inferiority, and sometimes turn to the bottle for comfort.
>
> I'm a realistic person, one who doesn't spend much time daydreaming about the future. Once I made the decision to enter dentistry and was admitted, my life was pretty well laid out for several years to come. Most

of the things I think about and plan for are the practical, immediate things I have to do. Theoretical things and "egg-head" notions don't interest me much. It is fun to imagine what it will be like to be in practice, but right now that is in the vague, distant future. I try to focus on getting things done now, and, even though I procrastinate at times, I do accept my current responsibilities.

The study of dentistry is fairly rough, especially these first two years when we have to take all these theory and basic courses. It looks to me just as tough the first two years in medical school. This is going to be the hardest part for me, maybe I don't have the kind of brains that it takes. If it were just learning how to do the job, I would not be this worried, because I'm rather sure I can do things well with my hands. This means I'll have to study harder and longer hours now, because I feel a lot of hard work will make up for my not being so sharp. Other people may not be able to do this, but I am not that lazy, and I have the ambition to keep me going.

As an established dentist, my income is going to be good. It's the debts that pile up paying for professional education, buying equipment, and putting out money for office space and help that worries me. It takes a few years to get started, and I may not be able to meet my financial obligations on time. I may have to take a salaried position, at least half time, the first few years to get started more securely.

The Dental Student's Concept of Public Attitudes Toward the Dentist

The *Journal of the American Dental Association,* March 1958, published a pilot study entitled, "A Motivational Study of Dental Care." In that study the research psychologists and sociologists explored intensively, with people of middle class and lower class, their subject's feelings about teeth, the meaning of teeth and dental care to them, and social class differences in attitudes and practices. In the final section of that research report (pages 911-917), they explored some of the attitudes the 126 individually studied people expressed toward dentists themselves. Although that study does not represent a statistically broad sampling of our entire population, it does represent one of the more intensive studies of attitudes towards dentists that we have available. A high degree of professional competence is brought to bear on genuine, underlying meanings for the attitudes found. At the same time they were very careful to state that, while they found these kinds of attitudes, they could not, with the size of its sample and its local nature, estimate how widespread or how intense these attitudes were in various social groups throughout the country. Not only did these researchers find that the attitudes toward the dentist are quite varied and complex, but they vary from one socioeconomic group to another. They found that there is a fairly general recognition of dentistry as a high status profession; a feeling that in most instances dentists are competent to aid people in solving problems that their teeth give them. On the other hand, certain definite criticisms of the dentist are voiced, and we wish to indicate some of these as a contrast to the attitudes entering dental students feel the public has about dentists.

One specific complaint mentioned is the attitude that dental costs are high, and dental care in general is quite expensive. They found a feeling among people that the professional identification of the dentist is not sufficiently well established or strong to justify the level of fees paid to him. The second major criticism leveled at the dentist is that he is painful; that dentists hurt their patients. There is a widespread, underlying anxiety associated with getting dental treatment. They found that pain is closely associated by most

people with all types of dental problems. This pain is involved not only in what the dentist does, but what drives a person to go to the dentist in the first place. Similarly, these researchers found the public criticizes the dentist for the way he handles people in his office—the difficulty in making appointments, and the necessity to wait in uncomfortable reception rooms unnecessary lengths of time. People feel that the dentist is too rough. In this last instance there is some indication that the public feels the dentist is not as highly skilled as he should be. These respondents did not see the dentist as friendly enough; they thought he was too aloof, too remote from patients, and not a warm person who was personally concerned with his patients.

In the present survey of dental students we had the opportunity to assay the student concept of public feeling about the reaction to dentists in a variety of ways. First of all there were two cartoons presented to them in a group of three cartoons. These provided an opportunity for the responding person to fill in the "balloon" over one person's head in the cartoon with an appropriate response. One person is holding his jaws and saying, "I've got an appointment at the dentist," and our subject then replied to him in a variety of different ways. The second of these cartoons that we want to report is of a person in a dentist's chair and the dentist standing beside the chair saying, "Now we'll begin." The figure of the man in the chair then makes some reply to him.

A second way in which we got the student attitudes was to present them with four figures of faces showing an intensive scowl, a mild frown, mild smile, and a very pleasant, striking smile. These four faces were placed at the head of four columns, and we asked the student to check under the column what the average person would feel about interacting with the dentist under seven different situations—meeting the dentist; asking him to cooperate on a club project; thinking about going to the dentist at the time the appointment is made; the actual day of the appointment; during the visit; and finally, when the dentist says the work is finished.

Still another way we tried to get at the student concept of attitudes toward dentistry was by asking them why more people do not apply for admission to schools of dentistry. In one way this particular item may reflect their own feelings of basic inadequacies in them-

selves. Actually they are a part of the perception of the public feeling toward dentistry.

The final table we report deals with the student concept of specific attitudes toward the dentist in two items—"The attitude of most people toward dentists is," and "My parents' attitudes toward dentists are." Throughout all of these tables we see that there is a more positive attitude toward dentistry than might be inferred from the article by Social Research Incorporated, from which we extracted various notions at the opening of this paper. It must be remembered that these students are strongly identified with dentistry. This, necessarily, is going to condition some of their feelings about it, and their responses to these questions in a more positive direction than might have been the case if they were members of the general public.

How we feel that others see us has an important effect on how we view ourselves and our work. If we believe that friends, acquaintances, and clients regard us with negative feelings—hatred, disgust, loathing, fear, anxiety, or the like—this tends to lower our own self-esteem. Virtually everyone wants to be accepted, to feel that at least some member of his personal public likes, trusts, admires, or respects him. If the dental student's attitude about probable acceptance of him as a dentist were consistently negative, there would be enormous difficulty explaining psychologically why he chose the occupation. Even persons in quite lowly and objectively unpleasant jobs will tend to mention something positive about his work—the garbage collector speaks of his role in human sanitation.

In Tables 1a and 1b we have summarized responses made in completing two small cartoons. The figures were all male and youthful, to correspond with the usual dental student. The "balloon" for one figure contains a statement, as given at the head of each table, and the other figure has an empty balloon to be completed by our student in reply. Table 1a represents an overwhelming tendency to present dentistry in a positive light. Nearly half made some kind of soothing, positive comment to the apparent sufferer: "It will be over in no time, and you'll feel all right," "Don't worry, the dentist will take good care of you." Similarly, there is nothing of a negative character to categories 2, 4, 5, 6, and

TABLE 1a

THE ENTERING STUDENTS' CONCEPT OF REACTIONS TO THE DENTAL APPOINTMENT

CARTOON I. PERSON SAYS, "I'VE GOT AN APPOINTMENT AT THE DENTIST"

Our subject replies with:

	N	*Per Cent*
1. A soothing, positive comment	1,722	48.1
2. An objective inquiry about the work to be done	599	16.8
3. Expression of distaste, sadism, negative feeling, sarcasm, or references to pain	459	12.8
4. Innocuous comments	294	8.2
5. Reference to his own teeth	124	3.5
6. Reference to modern techniques and drugs	119	3.3
7. Identification of himself as a "dentist"	82	2.3
8. All other responses	122	3.4
9. Left blank	57	1.6
Total	3,578	100.0

7. All but category 4 should be obvious as to their contents. In 4 we placed such innocuous and meaningless replies as "Oh," "I see," and the like.

In Table 1a, less than 13 per cent made any reference to pain, or indulged in any unkind comment to the patient. We have coded here such responses as: "I'm glad I'm not in your shoes," "I hope he really gives it to you this time," and "That's what you get for waiting so long." In all, however, the extent of negative feeling expressed in the context of "have an appointment with the dentist" is quite small.

In Table 1b we move to a cartoon representing the context of the dentist's office at the time he is beginning to work on the patient's mouth (the drill in hand implies to this writer that prior examination, etc., has been completed). In this frame of reference the anxiety level increases considerably. Negative forms of response predominate. Categories 1, 3, 5, and 7 are one form or another of negative response, accounting for over 50 per cent of the responses. These outweigh the sum of positive acceptance (2), objective inquiry (4), cooperation (6), "Just tell me what you want me to do," and self-

TABLE 1b

CARTOON II. DENTIST FIGURE WITH DRILL IN HAND SAYS, "NOW, WE'LL BEGIN."

Figure of man in chair is seen as expressing:

	N	*Per Cent*
1. Fear of hurt or pain	937	26.2
2. Calm acceptance	868	24.3
3. Mild distrust	503	14.0
4. Curiosity about the work	374	10.4
5. Irony, hostility, sarcasm	293	8.2
6. Cooperation, desire to learn	134	3.7
7. Diversionary tactics	81	2.3
8. Self-identification with dentistry	38	1.1
9. All other responses	57	8.2
10. Left blank	293	8.2
Total	3,578	100.0

identity with dentistry (8). These findings indicate a clearly defined gradient of feeling toward the dentist from positive to negative as a function of the immediacy of interaction with him in his professional role. It is of considerable interest that this extent of negative feeling is expressed by the student himself. We find such expressions as, (1) "Try to make this as painless as possible, will you?," (3) "Take it easy, Doc," (5) "Are you sure you know what you're doing?," and (7) "Let's check those X-rays again to be sure."

When we pass to Table 2 the gradient of supposed feeling toward the dentist, depending on the situation, is made abundantly clear. The preponderance is negative in two situations, 3 and 5, although there are fairly strong negative minorities in 4 and 6. The mental anguish of "thinking about need to go to dentist" is clearly the most distressing thing for a patient. Those situations involving action (4, 5, and 6) in making the appointment, keeping it, and completing the visit and setting a new appointment are not quite so distressing as the mental condition alone. If we can couple this item to the cartoon in Table 1b, we can expect a rise in negative effect at the point the client is seated and the dentist begins work. We may also have a clue here why people put off making appointments—the distress of

TABLE 2

DENTAL STUDENTS' CONCEPTS OF PUBLIC ATTITUDES TOWARD DENTISTS IN DIFFERING SITUATIONS

	Students Feel the Attitude Is											
	VERY NEGATIVE		MILDLY NEGATIVE		MILDLY POSITIVE		VERY POSITIVE		DATA MISSING		TOTALS	
The Situation	N	%	N	%	N	%	N	%	N	%	N	%
1. Meeting the dentist, not needing service	33	1	56	1	930	26	2,454	69	105	3	3,578	100
2. Asking dentist to cooperate on club project	7	—	50	1	1,178	33	2,238	63	105	3	3,578	100
3. Thinking about need to go to dentist	261	7	2,168	61	1,003	28	41	1	105	3	3,578	100
4. At time appointment is made	107	3	1,066	30	2,023	56	275	8	107	3	3,578	100
5. The day of the appointment	494	14	1,541	43	1,279	36	138	4	126	3	3,578	100
6. During the visit, dentist sets next appointment	199	6	1,012	28	1,834	51	409	12	124	3	3,578	100
7. Dentist says work is finished, "You're in good shape" ..	13	—	8	—	188	5	3,258	91	111	3	3,578	100

"thinking about" is more unnerving than any subsequent feeling while carrying through on the appointment.

Some other important features of the dentist's role are apparent in Table 2. His ameliorative function is seen as the most positive (7), but these students also have a strong need to feel that the dentist is positively accepted in both his informal social role (1), and in his community group role (2).

Table 3 presents still another way of assaying how dental students feel others view dentistry. This question is focused on their immediate situation, and it inquires why they feel their peers have not selected the same vocation. These students seem to state that, compared with themselves, others who do not seek admission to dentistry do not have as much drive (1), achievement (3), perseverance (4), intelligence (3 and 8), or manual skills (9). The student himself seems to be reiterating fears we have noted before, that the cost of dental education is prohibitive (2), and that years of added training are required before entering the productive career phase (5). In spite of fairly high requirements for entry, not many see sheer lack

TABLE 3

THE THREE MOST IMPORTANT REASONS WHY MORE PEOPLE DO NOT APPLY FOR ADMISSION TO SCHOOLS OF DENTISTRY ARE: "——"[a]

Category of First Response	*N*	*Per Cent*
1. Lack interest, desire, motivation	994	27.9
2. Lack adequate finances	652	18.2
3. Poor academic record prevents entry	423	11.8
4. Fear hard work and possible failure	280	7.8
5. Lack the time to complete	208	5.8
6. Basic distaste for the job	195	5.5
7. Ignorance about the profession	184	5.1
8. Lack the intelligence and ability	139	3.9
9. Lack necessary manual skills	94	2.6
10. Unpleasant experiences with dentists	43	1.2
11. Can't meet general requirements, and all other responses	161	4.5
12. Left blank	205	5.7
Total	3,578	100.0

[a] Only the first response is tabulated here.

of ability (8 and 9) as deterring possible applicants. More feel that people are ignorant of the profession (7), or have a basic distaste for it (6). We may be able to decrease this ignorance, and reduce unpleasant experiences (10); but, it is hard to combat "basic distaste." Some of the replies in category 6 read, "They find the idea of working in someone's mouth disgusting," "They couldn't stand having to hurt someone to fix his teeth." We need to remember that, even though these are the student guesses about how others feel toward dentistry, they also reflect their own projections of fears and concerns. Thus it is probable that many of them feel real concern about finances, time to do their studies, and their possible lack of brains and skills. Some may even wonder secretly whether they will find the work itself distasteful!

Table 4 again tabulates two open-ended items. Here we ask for the concepts of how they think the general public and their own parents would regard dentists. The table is arranged in order of decreasing frequency for the general public responses, which can be compared readily with the frequencies for the same categories in the column for "parents." The over-all finding for "the attitude of most people," as these students sense it, is similar to that found in Table 1b earlier. Over half the responses here are negative, just as they were to a cartoon of a person about to receive work from a dentist.

By contrast, Table 4 shows a remarkable shift of feeling about the attitude of parents toward the dentist. Almost 89 per cent think their own parents have a positive attitude. It would be genuinely remarkable if an objective poll of the parents of dental students were to reveal only about 5 per cent negative evaluations at the same time that the general public gave over 50 per cent negative responses. While we cannot assume that the frequencies in either column are realistic, we do need to try to account for the kind of difference seen here.

Some immediately plausible reasons occur to us on why parents of dental students are felt by those students to have far more positive attitudes toward dentists than the average person in the population. An obvious reason is that such parents would feel more positive simply because their son has entered dentistry. Getting into dentistry represents a "step ahead" for three-fourths of our students; and, this may lead to increased parental pride in the attainment of these offspring, with concomitant kinder feelings toward the profes-

TABLE 4

ENTERING DENTAL STUDENTS' CONCEPTS OF OTHERS' ATTITUDES TOWARD DENTISTS

A. "THE ATTITUDE OF MOST PEOPLE TOWARD DENTISTS IS ———"
B. "I FEEL MY PARENTS' ATTITUDES TOWARD DENTISTS ARE ———"

Type of Response	*A* N	*A* PER CENT	*B* N	*B* PER CENT
1. Fear, anxiety	1,012	28.3	43	1.2
2. Positive, favorable	581	16.2	1,759	49.2
3. Respect, admiration	537	15.0	711	19.9
4. Dislike, avoidance	397	11.1	46	1.3
5. Negative, but see them as essential	250	7.0	49	1.4
6. "Same as mine"	196	5.5	186	5.2
7. Benefactors, need more of them	145	4.1	229	6.4
8. Rough, painful	118	3.3	5	0.1
9. Expensive, charge too much	84	2.3	34	1.0
10. "Normal," "average," and miscellaneous	54	1.5	286	8.0
11. Second rate to an M.D.	9	0.3	5	0.1
12. Left blank, or "don't know"	192	5.4	225	6.2
Total	3,578	100.0	3,578	100.0

sion they have entered. Secondly, we know the average education and socioeconomic status of parents of dental students is well above the average of the total population. We know in this regard, from other sources, that positive attitudes toward dental care and the dentist himself increase as we move to higher educational levels, and as we move from lower social class to upper middle social class. A third potent force leading to our findings lies within the students themselves. Virtually all of us feel a deep need to have the affection and recognition of our own parents. It would be hard for us to believe we had earned these feelings in our parents if we enter a profession we know they view with distaste. Therefore, the dental student psychologically must try to envision his parents as holding favorable feelings toward dentists. These kinds of forces may be sufficient to account for the disparities noted, from the point of view of the student's own perceptions. We hardly can credit that such enormous differences are apt to be found between the general public and parents of our students!

Summary

In this paper we have discussed the dental student concepts of the attitudes of others toward the dentist and the practice of dentistry. They have positive attitudes toward their own work and are willing to express these to others. They realize that most people have strong feelings of anxiety about visiting a dentist, but also feel the public regards him with warmth and acceptance outside his work role. The student himself, whether he consciously admits it or not, tends to feel trepidation at having the dentist work on his own teeth. Generally they feel superior to the average person in mental ability, skills, and in drive to achieve their vocational goal.

Miscellany: On Wishes and Aspirations

This section contains some fairly unrelated tables. A common theme can be seen in that each deals with some potential interest, aspiration, or desire regarding the person's future practice. None of these appears to have such intensity of meaning as the motives to enter dentistry discussed in an earlier section. These seem to have a lighter meaning, caught by the phrase, "If I could have my way, I'd rather ....." The four topics are:

1. Size of town in which the subject would like to set up practice,
2. Which dental specialties he might like to enter,
3. Which of ten dental jobs he would be willing to follow, and
4. The income he expects to be making after five years of practice.

These four points are also covered by Mann and Parkin in "The Dental School Applicant," *Journal of Dental Education,* March, 1960. The reader may compare with their Tables 9 and 36, 35, 37, and 38. In general, our results are similar on the students to theirs on applicants, even after unsuccessful candidates have been eliminated. There are some differences, and we will attend to these as they appear.

Table 1 presents the proportions who wish to practice in a city the same size, larger, and smaller than their home towns cross-tabulated by actual home town size from another question. The important feature to note is the very large portions from farm and small communities who wish to migrate to larger centers. Likewise, relatively large percentages of those from cities over 250,000 wish to move to smaller centers. Such a redistribution of the dental population carried forward for only a handful of dental classes would result in an absurd maldistribution of dentists in respect to expected population distributions. Even the great metropolitan centers, now perhaps over stocked with dentists, would experience a severe shortage in half a dozen years! Clearly, wished-for movements are not likely to take place in line with ratios given here.

Comparing these results with those of Mann and Parkin (Tables 9 and 36) we find our over-all totals for "Same," "Larger," and "Smaller" city desired do not differ much from theirs. One difference between applicants and those finally accepted may point to an unconscious bias on the part of admissions committees. Specifically,

TABLE 1

DESIRED SIZE OF TOWN FOR PRACTICE BY SIZE OF HOME TOWN

Size of Home Town (in 000's)	*Desired Size to Locate Practice*							
	SAME[a]		LARGER[a]		SMALLER[a]		SUBTOTAL[b]	
	N	%	N	%	N	%	N	%
1. Farm	50	35.7	90	64.3	—	—	140	3.9
2. Under 5	139	31.1	313	68.5	4	1.0	456	12.7
3. 5-20	338	60.6	200	35.8	20	3.6	558	15.6
4. 20-50	321	68.7	103	22.1	43	9.2	467	13.0
5. 50-100	208	68.6	43	14.1	52	17.1	303	8.5
6. 100-250	255	71.2	34	9.5	69	19.3	358	10.0
7. 250-500	163	64.2	10	3.9	81	31.9	254	7.1
8. 500-1,000	156	56.9	16	5.8	102	37.2	274	7.7
9. Over 1,000	272	53.2	—	—	239	46.8	511	14.3
Subtotal	1,902	57.3	809	24.4	610	18.4	3,321	92.8
Data missing							257	7.2
Total							3,578	100.0

[a] Percentages in Same, Larger, and Smaller columns are computed using row totals for each Home Town size.

[b] Percentages in Subtotal column are computed using Total (3,578).

a disproportionately greater percentage of those from farms and small towns is admitted, and an appreciably smaller percentage is retained from the metropolitan groups over 500,000. Surely some strange force is at work here, for *on the average,* the education of the city boy is superior to that of the rural and small town boy. Additionally, from Mann and Parkin (Table 9) we learn that the heaviest group of farm background applicants is in the Southeast—the very region with the weakest educational standards in the nation. This tendency may well merit some scrutiny by dental schools.

A more serious problem seen in our results is the evident failure of recruitment in both the rural areas and the great cities. Over 10 per cent of our population is classed as "rural," but we find less than 4 per cent of our student body and less than 3 per cent of applicants from such a background. At the other extreme, over 25 per cent of our population is in cities over 1,000,000. We draw only 14.3 per cent of our students from this source!

Table 2 lists possible interests in future specialization broken down by whether the respondents knew or did not know the meaning of

all the specialties. Comparing ratios between columns for each specialty with the ratio of the column totals, it is evident that those specialties which were relatively not well known were oral pathology, pedodontics, periodontics, and prosthodontics. Nonetheless, 2,082 out of 3,578 students do indicate a specialty of interest. We can readily imagine the shock to dentistry if even a half of this number attempted to carry through on this tentative interest. Fifty-eight per cent indicate this interest, but less than 5 per cent of American dentists are listed as specialists! Fortunately we can expect these wishes to fail of implementation. Also of note is the fact that surgery wins the glamour poll in dentistry, just as it also does in medicine.

TABLE 2

INTEREST IN SPECIALIZATION AMONG ENTERING DENTAL STUDENTS

	"Do you know what all these specialties are?"							
	YES[a]		NO[a]		DATA MISSING[a]		*Total*[a]	
Specialty Desired	N	Per Cent	N	Per Cent	N	Per Cent	N	Per Cent
1. Dental Public Health	18	0.9	10	0.8	1	0.5	29	0.8
2. Oral Pathology ...	31	1.5	8	0.6	—	—	39	1.1
3. Oral Surgery	601	29.0	281	21.2	11	6.0	839	25.0
4. Orthodontics	490	23.7	307	23.2	7	3.8	804	22.5
5. Pedodontics	140	6.8	56	4.2	1	0.5	197	5.5
6. Periodontics	23	1.1	5	0.4	5	2.7	33	0.9
7. Prosthodontics	76	3.7	6	0.5	5	2.7	87	2.4
8. "I don't know yet."	687	33.2	646	49.0	11	6.0	1,344	37.6
9. Data Missing	4	0.2	5	0.4	143	77.7	152	4.2
Totals	2,070	100.1	1,324	100.3	184	99.9	3,578	100.0

[a] Percentages based on totals in each column.

Table 3 gives results of a checklist with heading and categories as stated in the table. Again there are some appreciable divergencies from the work published on applicants (Mann and Parkin, Table 37). We might speculate (idly perhaps?) that an applicant is *more* likely of admission if he is willing to be a teacher and/or go into group practice, and *less* likely of admission if he wants research, public health service, and/or private practice! These are strange results, but given the large numbers involved here even small changes in percentages are statistically significant.

TABLE 3

"WOULD YOU LIKE TO BE ANY OF THE FOLLOWING?"

(Check as many as apply.)

Type of Work	*N*	*Per Cent*[a]
Dental teacher	1,299	36.3
Dental research worker	977	27.3
Dentist in armed forces	1,040	29.1
Dentist in U.S. P.H.S.	344	9.6
Dentist in state or local health department	389	10.9
Dentist in a factory or plant	247	6.9
Dentist in a public school system	658	18.4
Dentist on a hospital staff	1,531	42.8
Dentist in group practice	1,126	31.5
Dentist in private practice	3,252	90.9

[a] Percentages of 3,578 questionnaires with the given item checked.

There are some other findings in our research that illuminate these data. A separate run showed that almost all of those who checked a willingness to be dentists in the armed services are in fact those who anticipate having to go through military duty subsequent to graduation. Those who had been through service tended to avoid this choice in the checklist.

Elsewhere we have inquired about attitudes toward and willingness to do dental research, both in open-ended items in the questionnaire and in interviews with students. Those findings flatly reverse this checklist result; nearly ten times as many check this item as we found in the other sources. In the opposite direction, far more than on the checklist indicated in interviews that they plan to work in a factory, plant, or business, as a "company dentist," at least part time for a few years. They definitely said they might not like it and had no intention of this as a career, but felt it would provide a way of easing financial burdens during the years of starting a practice. The overwhelming choice is private practice, entirely in line with all we have gathered as to the essentially independent temperament of the man who enters this profession.

In Table 4 we turn to the financial expectations these students desire after five years in practice (Mann and Parkin, Table 38). We

certainly can feel that estimates at both the upper and lower extremes are unrealistic. The expected average income, however, is fairly close to the average income of dentists in practice. As an average this is not unreasonable, but the average dentist has certainly been in practice far longer than five years in order to attain it!

TABLE 4a

FINANCIAL EXPECTATIONS OF ENTERING DENTAL STUDENTS AFTER FIVE YEARS IN PRACTICE

Level of Income	*N*	*Per Cent*[a]
Under $5,000	11	0.4
$ 5,000 to $ 9,000	431	17.0
$10,000 to $14,000	1,093	43.0
$15,000 to $19,000	583	23.0
$20,000 to $24,000	250	9.8
$25,000 to $29,000	91	3.6
$30,000 and over	80	3.2
Total	2,530	100.0

[a] Percentages based on those records which provide an answer in dollars. 767 persons gave essay answers, and 272 left the question blank.

TABLE 4b

Range: $1,000 to $90,000
Average: $13,562
Standard deviation: ± $7,243

Dentistry and Manpower Resources

Preceding sections in this issue have concentrated on a number of aspects of the dental student population. In some we have been concerned to relate many of these features to their implications for recruiting future students and to their evidence of possible inappropriateness in selection processes. In other sections we have represented this student to the reader as an essentially normal, healthy, well-balanced individual. He comes from a better than average family background, and he is very strongly motivated to improve his own status beyond that of his origins. While he is a societally normal, stable person, at the same time he is psychologically complex, exhibiting an array of powerful, unusual needs and drives. These features of the total person make dentistry *the* profession for which he seems most ideally suited. Other occupations may satisfy some of these needs, but none we have been able to imagine would "supply" outlets with the balance and intensity of dentistry. Other vocations may answer some of these needs with greater force, but with a loss of other needs the dentist is apt to feel are required for his general satisfaction and sense of well-being. For the record, we wish to catalogue here the strongly felt needs of dentists which their profession provides. It may interest the reader to try to discover any other occupation which affords these in the pattern we find in dental practice (this list is not in any order of intrinsic importance).

1. The need to be *nurturant:* to give help and service to fellow men.

2. The need for *status:* to enjoy a high level of prestige and recognition in one's community.

3. The need for *acquisition:* desire for money, income, material possessions.

4. The need for *autonomy:* to be independent of others, make one's own decisions, determine and act on a course of life for oneself.

5. The need to use *manual skills:* this seems akin to the kinds of satisfactions found in both the work of the skilled mechanic and the performance of the virtuoso musician.

* * *

The first five have been given explicit attention in one or more of

our papers. In addition we may list five more needs given outlet in dentistry, the last two have been mentioned earlier.

6. The need for *orderliness:* dentistry requires a very high degree of attention to fine detail, involves compulsiveness in working to close tolerances.

7. The need for *dominance:* the ability to direct others, to work on them without hindrance. We need merely point out here that the doctor-patient relationship is a superordinate-subordinate one in almost all instances. Further (and facetiously), the patient with a dam, some instruments, and a few fingers in his mouth does not "talk back."

8. The need to *express hostility:* to derive pleasure from hurting others. However offensive it may be to the profession to recognize this in itself, the evidence of public opinion convicts, and our psychological evidence supports this, that the dentist has some sadism in his make-up. But, because of the strong ethical controls of the profession, the hurting of patients is minimized and, ordinarily, occurs only when necessary to perform the required work. The existence and strength of this need and its expression in practice have not been explored, but have important societal consequences. We may hypothesize that the dentists' capacity to discharge this kind of affect in his *constructive* work role may make him a more congenial person (less apt to sarcasm, irony, biting wit) in other social situations!

9. The need for *intellectual experience:* the field, as an applied area of biological science, places considerable pressure on its incumbents for mental curiosity and competence.

10. The need for *esthetic expression:* the drive to produce something beautiful and functional, to feel that one's products are creative.

This complex of ten needs is insufficient to describe the personality of the dentist (as a vocational type). In the course of our studies of the dentist and the dental student we have constructed a considerable further array of needs, and combinations of needs, hypothesizing their presence, their absence, and their rejection. We cannot comment on these at this time, but we wish to assure the dentist who reads this that we know full well he cannot be subsumed under the ten headings above.

On the other hand, combinations among these ten personality

traits lead to some recognizable derivatives. The combination of status, acquisition, and dominance is virtually identical with what the businessman calls the *drive to achieve*. Putting together manual skills, orderliness, and esthetics, we have an old-fashioned, but in this writer's opinion, essential quality best named "craftsmanship."

In very rough form we have begun this section with a psychological sketch of the dental person. Whether this is the *persona* dentistry wishes to present to the world, we must leave to the profession. Let us now attend, in the remainder of this discussion to the fulfillment of this occupational role in our society.

The facts of population pressures soon to face us, the aging of the practicing dental group, the inadequate supply of dentists to meet current needs, and the growing demands of the public for dental care present a grim prospect. These facts have been presented forcefully to dentists in recent years.*

Recognizing that there are fewer dentists in active practice than the total number of dentists available, we present here some illustrative figures for the current period:

	184,000,000	population
	92,000	practicing dentists
	1:2,000	ratio
if in 1975 we have:		
	220,000,000	population
we need	110,000	dentists to maintain this ratio.

This imples that an average of 1,200 additional dentists must enter practice each year for the next 15 years. The present average rate of adding dentists is roughly 1,000, producing a deficit of 200 per year.

It is in the light of such events that we must welcome every advance in preventive dentistry. In addition we are recommending for serious consideration and action the following broad programs conceived as problem areas. It seems to us that we can "make up" our deficit of trained, active dentists only by vigorous attack along all these avenues.

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* Recent articles of relevance are: (a) Moen, Realism in Maintaining the Present Population-Dentist Ratio in the Next 17 Years. J. Am. Col. Den. 26:146-48, June 1959; (b) Panel Discussion, Recruitment of Dental Personnel. J. Am. Col. Den. 26:236-82, Sept. 1959; (c) Hollinshead, A Look at the Future of the Dental Profession: An Interim Report on the Survey of Dentistry. J. D. Educ. 23:123-28, June 1959; and (d) Kesel, The Survey of Dentistry and Dental Research. J. D. Educ. 23:129-34, June 1959.

1. *The invention, installation, and effective use of new types of equipment and methods.* It would be presumptuous of us to suggest here any new inventions to aid the dentist, rather we are pointing to the need to develop a philosophy of acceptance of progress. When tested instrumentation is available, it needs quicker recognition; the dentist himself is more apt to drive a 1960 Oldsmobile than a 1927 Buick! Of the clearly established advances in instrumentation, how widespread is their installation and trained use? When we speak of *effective* use, we wish to pin down the fact that the dentist who has been in practice a decade or two in all probability must accept training in some depth in new techniques in order to use them soundly and to integrate them into the total picture of his practice. When too, there are new methods (as extended beyond the concepts of instrumentation and techniques) which can improve the dentists' work, these deserve serious, prompt evaluation and promulgation to practitioners. Methods whereby, for example, we might reduce patient-chair hours by 25-30 per cent need to be broadcast. Journal articles, spread through local contact, and other current attempts are not enough. *Again,* we must have direct education in methods (a longer term affair), techniques (medium range in time), and instrumentation (a short range skill program).

In this same area of *innovation,* we are shocked on reading the evidence to find that in many localities dentists themselves are among the most rabid in opposing preventive dentistry. Fluoridation is enough to mention now. Again we must emphasize that a spirit of accepting progress must be instilled in the dental community.

2. *Streamline office practices.* We refer here to the troublesome minutiae which plague the practitioner. These are the things he feels distract and detract from his role as a professional practitioner. Bookkeeping, ordering supplies, and scheduling visits rank high in this list. The dentist characteristically pushes these things into the background. The assistant and the receptionist are only as good as their selection, training, and supervision. The effective dentist of the future cannot afford to dodge his responsibilities as an office manager and supervisor. The dentist's public relations and personal acceptance rest heavily on these agents who arrange his time and money. The patient who comes to the chair in a bad mood eats time.

Wherever possible we would recommend that dentists in an area

or location pool their bookkeeping, billing, collections, and tax problems—as well as payroll, accounts payable, rents, and the like. A movement of this nature would lead shortly to greater uniformity of reporting on the nature of work performed, and might lead to a more sensible uniformity of fees in relation to actual events. The very old and well-established practice of charging per "visit," or for a type of work done is obviously not valid. It is *time* that is at issue. Although the public is poorly conditioned to this notion, we strongly recommend a fee be based on a "time plus materials" system. This would be a difficult change to achieve, but we feel it would result in more equitable (and profitable) practice than the present piece-work system.

3. There needs to be *broader training and use of ancillary, technical personnel.* By this we mean that more dental technicians, hygienists, and assistants need to be trained. We also need to strive for fuller use of their time in the dental offices in handling all types of duties of running an effective office aside from activities at, or supportive to, the dental chair itself. Currently we are not getting sufficient return on our investment in training dental hygienists. The field currently is restricted to women, though the military now use male personnel in this category. Many young women may obtain this training as an "insurance" against having to work in later years. Thus we find a situation similar to the case in elementary school teaching in that only about 10 per cent of these young women remain actively in their work five or more years. This kind of employee turnover needs to be combatted, by recruiting young men into this work, and by attempting to reclaim at least a portion of the time of women who leave.

4. A fourth program we would like to suggest relates to *better financing of the early years in practice, coupled with an effort to improve the distribution of dental services.* In this connection, it might be feasible to interest major insurance companies in building, equipping, and staffing dental offices and clinics in areas now sparsely served. The young dentist could enter such a practice on a contract basis, with a fair graduated income over five years and option to purchase the facilities and practice later—or to continue it on a rental basis. We must seek some source of finance in order to start reaching that 40 per cent of our population who now receive either no dental care, or care only in severe crises.

The above four program areas relate to development of the practice of dentistry. They would have small chance of effecting progress if they did not rest on a firm base of education emanating from our dental schools. Clearly we must intensify our programs of continuing education for the man in practice so that his awareness and use of new equipment, techniques, methods, and ancillary personnel will be maximized. The following three program suggestions are directed toward the needs of dental schools. To meet future needs we must increase the number of graduates somewhere in the range of 94 (Moen's minimum) to 200 (our estimate) more each year! This requirement for physical facilities alone will create an enormous financial burden.

If in 1958 we have graduated 3,100 dentists, Moen's minimum of 94 more per year up to 1968 would mean we are training 4,040 per year, and in 1970 it would be 4,228. We are of the opinion that a higher rate needs to be approached; because, we have consistently underestimated our population gains, and, further, we should institute more rigorous screening of lower achieving students in freshman and sophomore years. Our figure of 200 more per year means that we *should* be entering into training about 5,100 dentists per year in 1970, and probably graduating about 4,600. The sheer problem of meeting this demand on physical facilities, teaching staff, and other levels probably will not be within the realm of financial and personnel feasibility. It is for these reasons that we feel all possible avenues of relief must be pursued as soon as possible.

5. *Build vastly increased dental school facilities.* Every possible public and private resource will have to be reached to meet this need. To date dental schools have not matched the successes of medicine or engineering in securing funds. Pressures on university budgets will become increasingly serious in the immediate future, and concerted action by the dental community is needed even to maintain the present "share." There must be every possible appeal to practicing dentists to support their schools through personal giving. May we also remark here that gifts with "strings" attached are of little benefit; the greater need of dental schools now is for *uncommitted* funds they can use for maintenance, upgrading old, even obsolete, facilities, and salaries.

6. Our next suggested program centers on *the optimum use of present facilities.* We can increase the number of graduates per year

by at least 20 per cent and probably more if we move to full use of present space and equipment. We can do this by admitting slightly larger classes and using tightly organized split-group sectioning. Secondly, there needs to be broadly instituted a 4-quarter, year around schedule, so that we graduate a class in three, rather than four, calendar years. (Because of the need for students to work Summers to pay for dental education, this last implies a vastly expanded scholarship and student aid program. This is another area in which dental schools must have great amounts of uncommitted funds.) An implication of this "full-use" plan is that continuing education for the practitioner now under a school's auspices will have to be handled evenings, weekends and during school holidays. But again, "full use" *means* that those times must also be scheduled!

7. Expanded facilities and "full use" will mean little without correspondingly *increased faculties.* There are two paths to be taken in this. First, more young people have to be encouraged into making teaching either a full-time or at least half-time career commitment. At present it seems this can be accomplished only if we are able to make such a choice financially rewarding in a fair ratio with the inducements of private practice. Secondly, we can improve the effectiveness and efficiency of dental teaching. Few members of dental school faculties have had any training in the processes of teaching. They have the percept of their elders, who in turn were good, bad, and indifferent teachers. What we envision here is that dental schools everywhere need to institute training (perhaps at a graduate level) in cooperation with the expert guidance available in Schools of Education on "The Teaching of Dentistry." Our interviews with seniors in dental schools have afforded us evidence of widespread malpractice so far as teaching techniqués are involved. The quality of the student we produce depends in great measure on the qualitative excellence of the instruction he receives. This responsibility for fine teaching rests with the administrators and all instructors in dental schools.

The following programs deal with dentistry's needs in the student area. These suggestions rest firmly on the evidence we have gathered from students and faculties of dental schools. There remain gaps in our understanding, and as we proceed we will outline briefly the necessary research to complete it.

8. Dentistry needs to seek a greater total flow of *suitable applicants* for training. We noted in our opening statement that it is our opin-

ion that dentistry has in recent years received its fair share of applicants from the available student market. This is not to say that we have had enough men of the desired calibre to do the job we face. It is simply the fact that for the past decade we have been drawing from the small child-producing years of the depression at the same time that the demands of the physical and social science areas have increased vastly. Dentistry has faced the same drop in applicants as medicine, which went from 24,434 in 1949-50 to a low of 14,538 in 1954-55, and recovered only mildly to 15,170 in 1958-59 after being up to 15,917 in 1956-57.

Increasing the total flow of applicants does not mean we should broadcast appeals to high school and college students. Far better results for dentistry will be obtained if we consciously focus recruiting results on those portions of high school and college populations that have strong academic records *and* some kind of appropriate mechanical background. The ideal recruiting group to initiate this nationwide search will be the local dental associations in every community. The understanding of dentistry, what it needs and what it offers, must be carried to high school and college counselors, and, even more, to faculty men in the sciences who can orient students this way.

9. Our research has indicated that we experience disproportionately *small numbers of applicants with rural and metropolitan backgrounds.* It is possible that we should concentrate greater efforts to reach men with such backgrounds. First, however, we should try to learn why this phenomenon appears, and thereby assess the validity of a readjustment of efforts in these directions.

10. We do seem to need to place more emphasis on *recruiting applicants from blue-collar family backgrounds.* It seems probable that there is an untapped reservoir of talent here. At the same time we must realize that such applicants are less likely to be able to pay for dental education than those from middle-class groups. Again, greater financial supports may be required.

11. A stubbornly neglected, perhaps resisted, area for increasing our dental population is recruitment of women. We have heard the arguments on this matter pro and con, but these in no way change the fact that here is a pool of potential dental talent which could enlarge our applicant group by nearly 100 per cent. Already the countries of Northern and Eastern Europe have large percentages of

women in dentistry and the evidence seems to indicate they are very well accepted. Medicine has learned that the expected portion of women physicians *not* in active practice in any single year is 14 per cent. There seems to be no reason why dentistry too could not expect an 86 per cent utilization of women trained in its profession.

Some planning is necessary to bring women into dentistry in appreciable numbers. Foremost is the need for change in the attitudes of acceptance for women in the faculties of dental schools. Let us now remind ourselves that this brand of chauvinism has no place in any of the applied sciences, and certainly not in a health service. Secondly, there may need to be some structural changes to accommodate women. More important, our research at this point affords us no reliable clues as to why women do come to this field. We may know something of the pattern of motives for men, but we suspect these cannot be generalized to the opposite sex with any assurance. Obviously, before we can plan to attract women, we must study the underlying motives women have to come into dentistry, what satisfactions they gain from its practice, and what it means in their career lives.

12. Dentistry needs to gain a firm understanding of the total process of becoming a professional man in this field. The entering student is in no sense a professional-minded person. What are the significant experiences and emotional changes in dental school that allow us to give him this label four years later? Further, is there a change, deepening or broadening, of his sense of professionalism in his early years in practice? The rich information we have on each person in the 1958 entering class provides an extraordinary opportunity to study this professionalization process in detail. In the writer's opinion as a social scientist this is a chance we can ill afford to miss. The possible benefits of such an on-going study have already lost a year or more of information by lack of support. If we are to realize on this research, we must follow up on our data collecting now, at graduation in 1962, and at further intervals as these men enter practice.

* * *

In the above review we have done two things: indicated psychologically the kind of person attracted to dentistry, and have outlined twelve program areas we feel need sincere attention if dentistry is to survive and experience healthy growth. It would be foolhardy to ex-

pect our blunt, often harshly critical words to gain warm support throughout dentistry today. Our real hope is that we can stir controversy, discussion, and some action. Dentistry must define the forms of action most appropriate to itself, and we are realistic in knowing that what evolves will probably sound much different from what we have suggested from the point of view of an outside discipline.

CALENDAR OF MEETINGS

CONVOCATIONS

October 15, 1961, Philadelphia

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco

Dentistry's Contribution To Human Welfare

Health has been defined as a state of optimal physical, mental and social well-being. Oral health plays an important part in each of these areas.

The face, of which the oral cavity is an important part, is the means through which the individual communicates with the world and it is the window through which the world looks into the character of the possessor.

It has been aptly said that your face is your fortune. It registers your personality, gives expression to your innermost feelings—good or bad—and provides, day by day and hour by hour, the means for making contact with one's friends and the world at large.

The oral cavity, with its many functions, plays a very important part in the person's well-being and facial expression.

It is dentistry's privilege to care for this facial area by providing care for the organs of mastication, speech and the digestive functions of the mouth.

Dentistry contributes immeasurably to the correction of oral anomalies in form and function and the rehabilitation of the handicapped.

Dentistry, through the maintenance of oral health, contributes to the physical, mental and social well-being of the human race.

—O. W. B.

Oath of Hippocrates

REVISED FOR MODERN DENTISTRY

"I will look upon him who has taught me this art even as one of my parents. I will share the fruit of my experience with him, and I will encourage his call for aid. I will regard all young dentists as my own sons, and I will offer them my knowledge and technics. I will teach by every means I know those valued lessons that were passed on to me by my predecessors.

"The regimen I shall adopt shall be for the benefit of my patients according to my greater ability and judgment to protect and preserve their natural dentition. I will agree to no procedure which cannot be substantiated by sound professional judgment and scientific diagnosis.

"Whosoever shall enter my office shall receive the same consideration and service as my own flesh and blood."—CHARLES M. STEBNER, D.D.S., F.A.C.D., Laramie, Wyoming

Health Opportunities for People Everywhere

S. S. HOPE 1

This hospital ship is the first of a great fleet that will carry physicians and dentists—and associated personnel in the health field—from the United States of America to friendly nations and to newly developing nations of the world with the sole objective of:

exchanging health knowledge
sharing health methods and techniques
acting as a health mission

In this program of *personal* international relations you Fellows of the American College of Dentists are asked to support HOPE I. Your contributions may be sent to the

National Dental Solicitation Chairman
Project Hope

HENRY A. SWANSON, D.D.S.
1818 M Street, N.W.
Washington 6, D. C.

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Dentistry in Israel

KURT A. ROSENZWEIG, D.M.D., M.P.H.

Introduction

The State of Israel was founded in 1948 in a part of the territory and as the successor of Palestine, a country which had been under British Mandatory rule since 1919. Up to that year Palestine had been a province of the Ottoman Empire. The Mandate given by the League of Nations after World War I contained the "Balfour Declaration" according to which the mandatory power was under obligation to facilitate immigration of Jews with the aim to establish a Jewish National Home in Palestine.

A Jewish minority had always lived among the Arab population of Palestine, especially in the larger cities for more than 100 years. Immigration of some size began in the eighties of the previous century as a result of intolerable persecutions. The immigrants came predominantly from Russia and they founded agricultural settlements in marginal areas of the country. The influx of newcomers grew after World War I mostly from Eastern and Central Europe. The ascendance of Hitler and his conquest of Europe drove those few who could escape the Nazi crematoria to seek asylum in Palestine. With the partition of Palestine and the establishment of the new state, the greater part of the Arab population fled, and a mass immigration of Jews from many countries soon turned the former minority into a majority. These general historical features are reflected in the development of dentistry in Israel since each wave of immigration brought dentists with it.

Legislation

In 1919, the British Administration found no regulations concerning the medical and dental professions. A few dozen persons, many of them women, were practicing dentistry, a great proportion without formal training. The newly established Department of Health set about bringing order to this field.

The first ordinance to regulate the practice of dentistry was issued

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in 1926, and in order to be granted a license the applicant had to prove his qualification by having studied dentistry ". . . for a period of at least three academic years in a dental or medical school recognized by the Director (of the Department) and has obtained a diploma in dentistry."[1] To those persons in the country who could not satisfy these requirements, the Director was entitled to grant ". . . upon application made within 12 months from the date at which this ordinance comes into force, if he thinks fit, a permit to practice dentistry to any person who was engaged in dental practice in Palestine on his own behalf for a period of five years at least during the seven years preceding the date of this Ordinance."[1] This permit did not entitle its holder to use the titles of Dentist or Dental Surgeon as the licensed dentist could. He was called a "Dental Practitioner." His activities were also subjected to some restrictions mainly in the prescription of narcotics. The practice of dentistry by licensed medical practitioners and the performance of "minor dental work by any attendant employed by a person authorized to practice dentistry under his personal supervision" was abolished in 1945, when the Ordinance was amended to make admission of more dental practitioners possible. A second amendment, an extension of the former, was introduced in 1947.

The Dental Ordinance of 1926 is still the basic law regulating the practice of dentistry in Israel. It was amended a third time in 1951 and recently in 1958 by the Knesseth (Parliament), essentially for the benefit of prospective dental practitioners among new immigrants. Thus there exist two types of practicing personnel within the dental profession in Israel: academically educated Dentists; and job trained Dental Practitioners, the latter a perpetuation of a need which was outmoded when the Dental School was founded, but which still remains "on the books."

Specialties are not recognized officially in Israel, although a number of well qualified dentists have limited their practice to orthodontics or oral surgery. Dental hygienists and dental nurses (in the sense of New Zealand) are non-existent in Israel. Treatment by such ancillaries would require special legislation.

Dental Manpower

As was mentioned before, dentists immigrated to Israel predominantly in waves, the most important of which were: 1923-6 from Russia, 1933-6 from Germany and Austria, 1937-9 from Poland. The

second world holocaust almost completely interrupted all immigration to Israel until 1946, when immigration again started from Poland, Hungary, and Rumania. In 1948-50 there was a wave of immigrants from Bulgaria, Yugoslavia, and Czechoslovakia, and the years 1955-7 again saw a renewed influx from Poland.

It is evident from the foregoing that the standards of the dentists, arriving from more than fifty different countries over a long period of time are most heterogeneous and reflect the standards prevailing in their countries of origin. The lack, until recently, of a School of Dentistry which would serve as a moderator of these discrepancies, by postgraduate education, was felt severely. Even more important, until the establishment of the Dental School, the country was entirely dependent upon immigration for its supply of dental manpower. It is therefore understandable why most dentists are well above middle age (Fig. 1).[2, 3]

The mean age of dentists in Israel is rather high—48 years (it is 44 in the U. S. A.[4]), and did not change significantly during the last nine years, whereas the median age rose (Table 1). These figures illustrate the aging of the established dentist population, together with the fact that most of the immigrants are in their late forties and early fifties.

Another remarkable feature of the dental manpower of Israel is

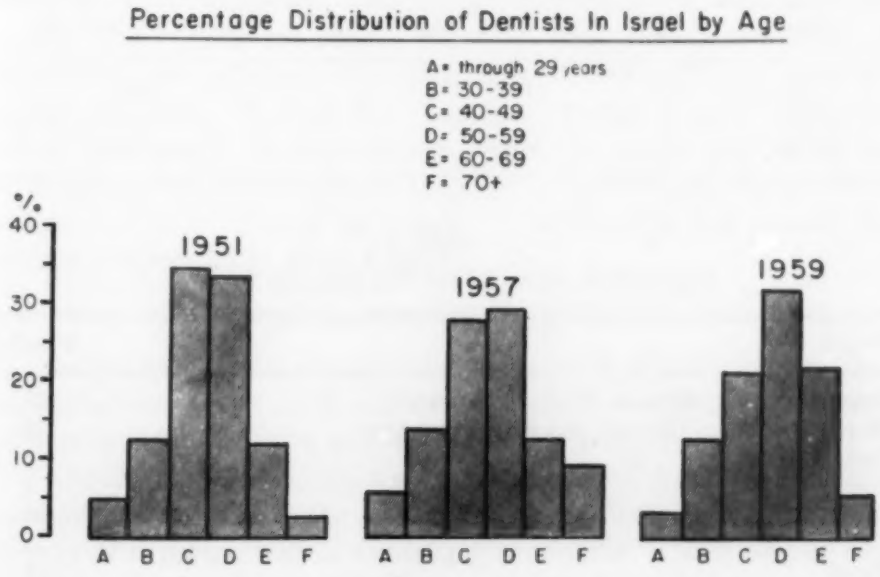

FIGURE 1

the fact that dentists are composed to a large extent (45 per cent) of women (Table 2).[3]

There are at present 518 dental practitioners licensed to practice in Israel, about 50 per cent of the number of dentists. Owing to legal restrictions (the minimum age required is 35 years) their mean age is 56.3 and the median age is 53.9. Only 6.2 per cent in this category are women, reflecting the fact that the greater majority had been dental mechanics previously. Permits to dental practitioners are granted at present at a high rate—124 having been admitted during 1959, thus increasing their number by almost 25 per cent. The num-

TABLE 1

AVERAGE AGE OF DENTISTS IN ISRAEL

Year	*Number Registered*	*Mean Age*	*Median Age*
1951	852	48.67	39.67
1957	989	50.15	39.88
1959	1074	48.06	42.67

TABLE 2

SEX DISTRIBUTION OF DENTISTS IN ISRAEL

Year	*Per Cent Male*	*Per Cent Female*
1951	60.4	39.6
1957	55.4	44.6
1959	55.2	44.8

TABLE 3

DENTISTS ADMITTED TO ISRAEL IN 1959

Origin	*Number*
Eastern Europe (Russia, Poland, Rumania)	27
Western Europe (France, Belgium, Germany)	6
South America	6
United States	2
Israel	10
Total	51

ber of dentists who were licensed in the same year was 51 (Table 3). Table 3 also shows the wide variety of countries from which these 51 came.

Dentist Population Rate and Geographic Distribution

The dentist population ratio is quite favorable at present (1:2,000, without the dental practitioners). It was 1:1,850 in 1951 and 1:1,900 in 1957.[5] During this period the total population increased by 25.3 per cent whereas the number of dentists rose only by 16.2 per cent. Figure 1 shows that the number of dentists between 30 and 59 years (the productive years) are slowly decreasing while the number over 60 years (retirement age) are rapidly rising. A study of Figure 1 is interesting if one follows the course of those under 30 years of age (who work the greatest number of hours), those between 30 and 39 (who have the greatest number of working weeks during the year), and those between 40 to 49 years (who see the greatest number of patients).[4] These are decreasing while those in partial retirement (after 60 years) are increasing.

It should also be pointed out that the work load of female dentists is much less and their professional life time much shorter than that of males. All these factors together indicate that the population of Israel is far less assured of an adequate dental manpower than would appear from the figures alone (1:2,000).

As in other countries, dentists in Israel prefer to live in urban communities. Thus the rural population, and especially the ethical minorities, are left without sufficient treatment facilities, with the exception of the "Kibbutzim" (communal settlements). The latter are visited weekly by dentists from the cities at the expense of the settlement. Figure 2 shows the geographic distribution of dentists as it was in 1951.[3] There is no reason to believe that this pattern has changed significantly since then.

Organization and Institutions

Dentists and dental practitioners have their separate professional organizations. There exists also an orthodontic society, and a society of dentistry for children has been founded recently.

The Ministry of Health does not have a dental division. A "dental adviser" is employed in the fields of licensing, both of personnel and import of supplies, and of dental public health. About 60 per cent of grade school children benefit from a dental school service, which

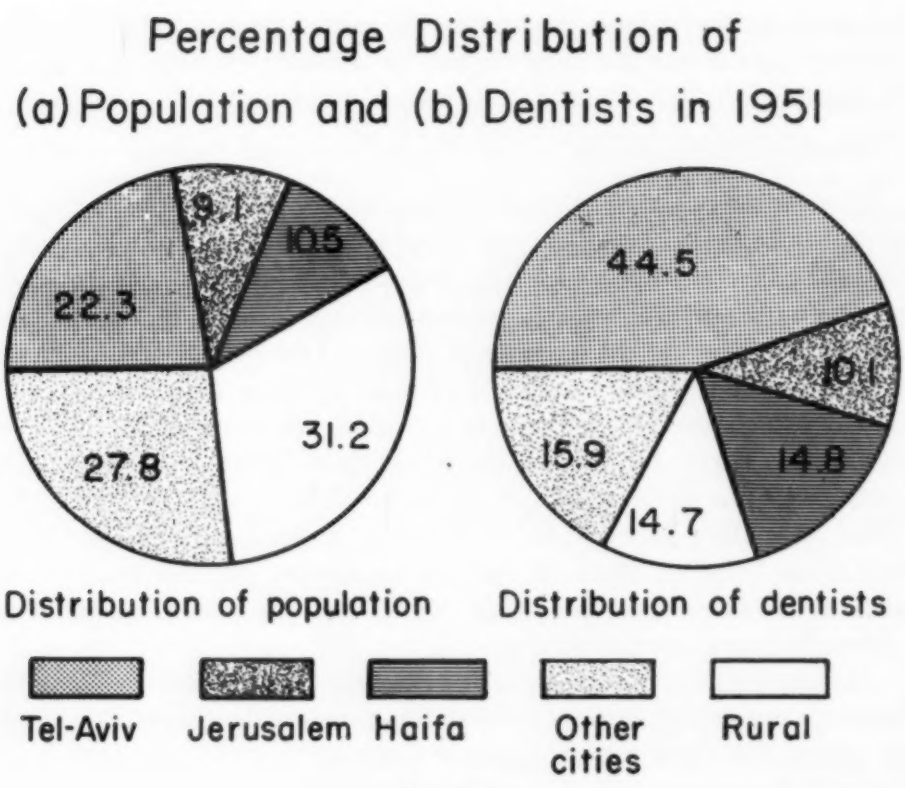

FIGURE 2

is supplied by the municipalities and financed by a small per capita fee.[6] At 18 years of age all able-bodied youths (boys and girls) join the Army which has its own dental corps.

There exist several cooperative non-profit organizations of health insurance. The largest, the General Workers' Sick Fund, operates a number of dental clinics staffed by salaried dentists. Treatment is given on a fee for service basis. Other organizations make the services of a closed panel of private dentists available to their members at a reduced rate.

The nonselective immigration to Israel brought a great number of handicapped individuals to the country, whose social and medical rehabilitation is the task of "Malben," a philanthropic organization whose funds are provided by Jewish organizations in North and South America. The agency has its own dental department where the chronically ill, the aged, retarded and blind children, and other handicapped people are treated.

Approximately 30 per cent of Israel's dental manpower works on a part-time or full-time basis in the above mentioned institutions.

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Predictions for the Next Fifty Years of Aviation

CAPTAIN EDWARD V. RICKENBACKER

To those whose memories go back to both World Wars, the name of Captain Eddie Rickenbacker is only too familiar. Captain Rickenbacker, famed U. S. aviator and aviation executive, is Chairman of the Board, Eastern Air Lines, Inc.

This paper was presented at the December 4, 1960, meeting of the New York Section of the American College of Dentists in the Hotel Statler-Hilton, New York City. The officers of the Section in charge of the arrangements were: Dr. Gerard L. Courtade, Chairman; Dr. Ormonde J. McCormack, Vice Chairman; and Dr. John J. Dolce, Secretary-Treasurer.

Any attempt to visualize, within 50 per cent of reality, what will be accomplished in the next fifty years of aviation would, in the eyes of his friends, qualify one as a fit subject for an insane asylum. I can speak from experience because, just thirty years ago, I ventured to predict such a glimpse of what we might expect in the next twenty-five years. Despite the fact that several of my predictions fell far short of what actually has taken place, my description of multi-engined transports; of trans-oceanic air service; of wide-ranging, high-flying military aircraft; and yes, of helicopters, sounded to many like the outpourings of an unbalanced mind. Yet, with this popular penalty vividly in mind, I will make the following predictions for aviation, within fifty years from now.

Long before the year 2010 is reached, military aircraft—both fighters and heavy bombers—will progress from turbo-jet engines at the speed of sound, to the more powerful ram-jet and rocket engines with supersonic speeds up to 2,500 to 3,000 miles per hour. These will be the forerunners of nuclear powered fighters and bombers, cruising 50 to 250 miles above the earth, with sufficient range to circle the globe without refueling, and will form a perpetual peace patrol. Even these will be but stepping stones to rocket-driven guided missiles, which are making obsolete our present con-

ceptions of fighters and bombers. Carrying a much further developed and devastating atomic bomb, these war machines will be controlled electronically and will require the help of human beings only at point of take-off. Speeds of these nuclear-powered guided missiles will increase progressively from 2,500 miles an hour to 25,000 miles an hour, and they will locate their targets with acoustical devices as yet unperfected.

This, I admit, is an ugly picture, but as man develops his ability to engineer these deadly instruments the need for them will diminish proportionately. In this fact lies mankind's greatest hope since the beginning of time.

Spectacular as are the developments ahead for military aircraft, the advance of aviation as the world's primary means of travel, over any appreciable distance, will be equally fantastic. Jet-powered transport planes will progressively graduate from today's giant aircraft, with speeds of 600 miles per hour, to veritable air liners, which will be cruising high above the weather with silent, vibrationless comfort, at speeds up to 2,500 miles. With these, we will be able to cross the continent in scarcely more than an hour—span the Atlantic in less than two hours—cross the Pacific in scarcely four hours—and circle the globe in scarcely ten hours.

The application of atomic power to transport aircraft will bring to reality aviation's inherent potential of being man's most economic as well as safest means of travel. Because of the limited weight of nuclear engine fuel, by comparison with the weight of tens of thousands of gallons of fuel now required for propulsion, the atomic engine will make possible tremendously increased payloads and ranges. This will mean far more efficient aircraft and, consequently, relatively lower and lower costs for the traveling public, and the shipper.

While these nuclear powered air liners will link all major cities over the continent and across the world, helicopters for inter-city short haul travel will progress from today's reciprocating engines—first to jet power, and then to atomic propulsion, increasing in size, and carrying from 50 to 100 passengers. To utilize this advanced means of transportation, all cities of any size will zone building heights in their downtown areas, and bridge the streets to make heliports of adequate size—an ideal convenience for the greatest number of people. The development of electronic devices and control, will make the operation of aircraft independent of the weather.

The conscious acceptance by the passengers, of the individual's role in promoting friendship and preserving peace, will be evidenced in a universal passport used for identification only, and airborne cargo will move freely in response only to the demands of commerce.

Finally, in the span of this next half century of aviation, space ships will become commonplace for inter-planetary travel. With luxurious accommodations for 150 to 200 passengers, they will use power derived from nuclear energy to develop speeds up to 25,000 miles per hour or better, and will have a practically unlimited range. In fact, space ships, in the year 2010, will be semi-self-sustaining planets in themselves.

What lies ahead for aviation? Our progress will be limited only by the limits of human imagination. To make these things, and even far greater wonders, man already has the God-given intelligence and the capacity for the knowledge they will require. Yet unless we can anchor our knowledge to moral principles, science may turn out to be, not the guide, but the betrayer of humanity. With aviation's development in the hands of men of good will, we have, for the first time in the long history of man, the one instrument which can forever eliminate the barriers of time and distance, of ignorance and misunderstanding, which since time began have set men apart and against each other. In terms of human relationships, these advances in aviation mean that the world will grow progressively smaller.

Then people of all nationalities will have, within their own hands, the means of meeting and understanding all people, and for eliminating the petty hates and jealousies which breed wars. For, in the years ahead, every community on the face of the earth will be a port of entry and departure for every other city, town, and hamlet, on the vast ocean of air, on whose shores every man lives. Then, instead of being the most deadly weapon God ever let man create, the airplane will truly become the Angel of Peace that He intended it to be.

Let me repeat, this is but a glimpse of the future I can see ahead, of just one facet of our surging economy. Science is increasing the productivity of man continuously, magically adding to his ability to produce more and more of the things which will aid and benefit more and more people everywhere. Opportunities? They are stored in abundance wherever you look. They are there waiting to be tapped by anyone with imagination—imagination backed by the faith in our freedom of enterprise and fortified by the courage to try.

In the field of electronics, visualize if you will, the promise of se-

lective registration of signatures—world wide—by television. Think of how the ability to register authentic signatures instantaneously in any part of the world, can improve the earning power of dollars, now held captive and idle in transit. Think of what it will mean when every bank in the world will have a television set, and where the exchange of credit, on signature, will make it unnecessary to keep billions of dollars in transit around the world—dollars which must now remain idle with no earning power. Think of the saving this will mean in interest charges alone; interest charges which benefit no one because of the much higher cost of allowing funds to remain idle. Through the universal adoption of selective signature registration by television, we can overnight contribute untold millions to the working capital of the world, and put these millions into productive use where they are needed most, and in a fraction of the time now required to transfer them.

Consider another promise of the application of atomic power. Visualize the tremendous productivity promised by the use of nuclear power to distill fresh water from the sea. This distilled fresh water, in volumes of billions of barrels annually, can be piped directly from the oceans to arid sections just as we now pipe oil and gas across the land. Reclamation of millions of idle acres will multiply the productivity of our own food supply, making it capable of feeding a population of 500 million without difficulty. And think beyond our own shores, of what this could mean to the rest of the world. For one thing, it would mean that no man should ever again lack food to eat. Apply this to human relations, to the cause of peace in the world, when mankind never again could be driven nor inveigled into aggressive acts by tyrants because he was hungry.

Visualize what anti-collision lights on automobiles could do to prevent accidents and the loss in our productive manpower that such unnecessary tragedies represent. We have the promise of the successful development of such electronic mechanisms for use on our aircraft—anti-collision devices, we call them—which will be able to add this further element of safety to our airliners that are already traveling nearly as fast as sound itself. It would be far less of an engineering feat to design such devices for automobiles, to tie them into the controls, so that under certain circumstances, they would automatically apply brakes, reduce horsepower and divert direction, saving untold thousands of lives every year.

From the aircraft industry, also, could come another tremendously

important contribution to more effective and more productive automotive power. On aircraft engines today, there is a turbine unit which, by utilizing the exhaust gases formerly wasted, now recovers from these gases approximately 20 per cent of the power produced by the original engine: production of additional power without an added drop of fuel. Applied to the automotive engine, this could mean a 20 per cent reduction in fuel requirement for a given mileage, or a 20 per cent increase in lifting and pulling power. Also important, however, is the beneficial effect this harnessing of exhaust gas could have on the elimination of smog and air pollution, which are becoming increasingly burdensome problems for every industrial and urban area in the country today.

There can be no question but what the world will continue to be more, instead of less, dependent on automotive transport. The provision of highway facilities today is one of the great problems faced by every community, every county, and every state in the Union. To provide adequate highway rights-of-way, we are spending billions of dollars building thousands of miles of arterial thruways by condemning land right and left, tearing down, and erasing residential and valuable industrial areas. Instead of spending billions for new surface highways, how much more could we accomplish with the same amount of money by elevating these automotive highways over the made-to-order beeline thruways which our railroad lines already have established. And the leasing of these overhead highway rights-of-way would provide a tremendous source of needed additional capital for our railroads, without detracting in any way from their own transportation business. What better, more direct line of communication could we have than these?

These are but a few of the tremendous opportunities that lie ahead of us. Who, then, can seriously question if there is any future in this great land of ours? No one with any knowledge of our country's past history, with any appreciation of the potential of a truly free and independent people, can fail to be optimistic. Our problem, then, is how well can we keep our nation on the right highway.

Our survival as a free people, and the freedom of generations to come, depends upon our ability to re-establish the eternal truth and principles upon which our beloved country was founded, and upon our willingness to demonstrate them in our personal and political life, and in our relations with other nations. To give the world the leadership it needs, by example, to lead the world out of the current

chaos of confusion, America does not need any world-shaking new discovery in political science. We need follow only one course—and it is so clearly marked, that our failure to recognize it is frightening. To create harmony among nations and to restore dignity to man, we need only to rediscover for ourselves the true principles of the American Way of Life, which have been tried and proved through some 180 tumultuous years. Rediscover them first, practice them at home, and then preach them to all our friends and associates throughout the world.

We have the greatest opportunity afforded mankind—to *sell* this concept of freedom to the world. I am convinced that, if each one of us would only renew our faith in the principles of our freedom, and use our highly developed talent for selling our principles, as well as our own products, our beloved country would remain strong spiritually as well as physically—so strong, that no power for evil could ever prevail against us, and freedom once more will be the hope, instead of the despair of mankind.

And it is you—the leaders of the dental profession and the thousands of men like you—whose highly developed talents have made possible the sharing of the ever-increasing national benefits of our free enterprise system, who also must be the leaders in this new selling order. You must be the missionaries, not of a new order, but of the age-old cause of freedom, upon which the welfare of America and the survival of freedom on this earth depend. If each one of us accepts such an assignment, if earnestly we devote our talents to its achievement, we cannot help but make some small individual contribution and, collectively, the results will be great.

But even more important, by so living today, we will inspire in the younger generation of tomorrow, a greater appreciation of the benefits and blessings which a gracious God has bestowed upon us as Americans. By teaching them these eternal truths, they can then keep this land of ours strong and free and, one day, lead the world from the darkness of bondage and despair into the holy light of hope and freedom, which is the mission entrusted to America. Then, when the candle of life is burning low, we can look back and say, "Thank God, I have contributed my best to the land that contributed so much to me."

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Dentist Needs for the Future

SHAILER PETERSON, Ph.D.

Dr. Peterson is Secretary of the Council on Dental Education of the American Dental Association and Assistant Secretary of the Association for Educational Affairs. Recently he was appointed dean of the University of Tennessee College of Dentistry.

This paper was presented at a symposium on "Career Opportunities in Medicine and Dentistry," New York City, December 29, 1960, at the annual meeting of Section Nd (Dentistry), American Association for the Advancement of Science.

The symposium was co-sponsored by Alpha Epsilon Delta, national premedical honor society. Dr. Peterson's paper appeared in the Alpha Epsilon Delta publication, Scalpel, *Winter, 1961 (Vol. 31; pp. 47-51).*

The subjects of this morning's session are representative of the kinds of discussion that have been held by many agencies over the past several years. It is gratifying and significant that Alpha Epsilon Delta is sponsoring this conference as a part of the Annual Meeting of the American Association for the Advancement of Science. All of the professions are becoming very cognizant of the need to study the problem of providing sufficient personnel to meet the demands of the future. This awareness of the problem has been prompted by two major factors—namely, the increased competition from new career areas, and the second, the reduction in the number of applicants which all of the established professions seem to have experienced in the last few years. While this last mentioned decline was actually expected, due to recognized reductions in the birth rate some twenty years ago, this decrease has been watched by admissions officers with a great deal of concern.

It has been interesting, in the case of dentistry, to note that the entire profession seems to be interested in this "manpower" situation and to note that a great many of the profession's agencies have gone on record officially expressing their concern. Moreover, many of these agencies have established special committees and have allocated

large sums of money for a study of the question. This has had the beneficial effect of impressing the profession with its responsibility for seeing to it that there would be an adequate supply of competent personnel to provide dental care to all who seek dental treatment, and also to try to find better ways and means of providing dental care for those who need treatment, even though they have not sought it. The profession realizes that by making the public more dental conscious, it will encourage more persons to seek dental care and that this care must be provided by a group of personnel whose numbers are not keeping pace with the rapidly expanding national population. In spite of this, the profession recognizes not only its responsibility for the dental health of the entire nation, but also a very real responsibility for providing the personnel who can meet this challenge and this need.

At the outset of studying this situation, most of the emphasis seemed to be directed at the educational institutions, for some persons would consider this to be purely an educational problem. The schools accepted their part of the responsibility, but it is interesting to note that it was not long before many other groups found that they had an important role to play in studying this question.

We now find that the public's dental needs of the future are being attacked from several different directions. Research is being accelerated in order to discover improved methods of reducing dental disease and hence, reducing the demands and the needs of the public for dental care. Attention is being given to improving the efficiency of dental practice by those who are expert in the field of practice administration, by the manufacturers of dental instruments, by research workers, by the dental schools, and by the practitioners.

As has been stressed thus far in this paper, at no other time has the attention of so many different groups in dentistry been focused upon one single, major problem—namely, the *needs of the future,* and with each group or agency wisely attacking the crux of the problem from its own point of view and utilizing its own facilities.

In the past two years, nearly all of the various societies and associations that are related to dentistry have taken some action announcing their interest in having programs developed which would attract an increased number of qualified persons for the profession of dentistry and also for an increased number of auxiliary dental personnel, including the dental hygienist, the dental assistant, and the dental laboratory technician. Also, there has been increased ac-

tivity in producing many brochures and pamphlets that describe the opportunities in dentistry. These have been widely circulated to counselors and advisors in the universities and colleges and to dentists who pass them on to patients. An increased amount of attention is also being given to the recruitment of potential dentists from the high school classes; but thus far, these programs have been left largely to the professional men in the community who are called upon by their service organizations and by the schools themselves.

The question is often asked: "How many dentists will be needed in the future?" Many statisticians have ground out figures to provide us with estimates of this need, but the true answer cannot be given by merely juggling numbers, nor can it be given accurately by anyone who is merely handy with a slide-rule. The usual method of calculating the number of dentists who are needed for the future is to estimate the number that will be needed in order to maintain the ratio of dentists to population which we have today, or to improve this ratio if possible. However, if we look at ratios, they become a bit discouraging, for we had a ratio of one dentist to 1,728 persons in 1930; one dentist to 1,865 persons in 1940; one dentist to 2,009 persons in 1950; and today, we have a ratio of one dentist to 2,150 persons. Incidentally, one reads many figures and they do not all agree. It should be mentioned that these were computed by the Association's Bureau of Economic Research and Statistics, and these figures intentionally exclude all teachers and all dentists employed by the federal services. Estimating the new schools that realistically may get under way in the next fifteen years, there is likely to be one dentist to about 2,450 persons by 1975. This means that we shall be short about 5,000 dentists in 1975 to meet the ratios that we have today, or short about 40,000 to recall the same ratios that we had thirty years ago. We could hold our own with our present ratios with one new school each year that would graduate a class of about 75, recognizing that the first new school started this year would not graduate its first class until four years from now. However, an average of one new school a year for the next fifteen years does not appear to be possible, although we are assured that there will be a number of new schools in that time.

This is certainly not to say that we have had losses in the number of dental students or in the number of dental schools, for they have increased; but it does mean that we are not able to keep up with the huge increases in national population. The number of

schools increased from 38 to 39 from 1930 to 1940; then to 42 in 1950; and we now have 47 in 1960, with another to be opened next year, or an increase of 20 per cent in twenty years. The number of graduates went from 1,561 in 1930 to 1,757 in 1940; and in 1960 to 3,253, an increase of 108 per cent in thirty years and an increase of 86 per cent in the last twenty years.

Similarly, the growth in dental hygiene schools has been remarkable, for in less than a ten year period the schools have grown from 16 to 37, with two more definitely scheduled to begin next year; or a gain of 144 per cent in schools and with nearly a 100 per cent gain in the number of graduates. This gain is even more remarkable in view of the fact that just about ten years ago, the curriculum of the dental hygiene program was changed from a one to a two year course. The growth in dental laboratory technician programs has not been as spectacular, but the increase in various kinds of programs for the dental assistants is also increasing rapidly and this increase is expected to continue since the profession has now approved a specific set of standards for such courses.

It is not my intention to present a paper that is pessimistic in tone. Also, I do not want anyone to interpret these figures to mean that there will be any lack of dental service in the future. While the figures certainly show that we cannot possibly have the same number of dentists to serve each group of 10,000 persons as we have had in the past, we must also realize that dentistry in the future is not likely to be practiced in exactly the same way that it has been in the past.

The practice of dentistry seems to be in an evolutionary period. During this period of time, the young student who is selecting a career will certainly choose wisely if he wishes to enter a field in which his professional services will be in great demand, and a field in which he himself will find it possible to make a contribution to both his profession and to the public. Surveys show us that many students select dentistry not only because of the service that they can render in the health field, but also so that they may be self-employed and engaged in a field of work which has high prestige value and one which also enables them to receive a satisfactory income.

The students who select dentistry will also find that growth in this profession will enable them to choose between a career of office practice and many other facets of dentistry. They may enter a field of research, which has the unique advantage of being practically a brand

new area of investigation, and they will find that their interest in research can include either the clinical areas, the related basic sciences, the areas of practice methods or public health, to name just a few.

Many dentists find that they can combine their interests and divide their time between teaching, research, and practice, and still have time to make a contribution to their own local communities.

Dentistry, by historical standards, can be considered an old or ancient art, judging by the time when dental appliances were first constructed. However, as a profession and as a career in which high educational standards have been required, dentistry is a relatively young profession.

Dentistry of the future will not be attractive for the young student who dislikes a routine-like existence or one who abhors complacency. Dentistry of the future will be attractive and satisfying only to those who are interested in a real challenge for a type of work that is continually changing and one that is continuing to offer new opportunities. Dentistry will be attractive to the student who wants to enter a field in which he can be sure that not everything has been done and where he can be sure that he can be a part of the evolution and the building. Dentistry will also be attractive to the student who has aspirations for being a part of a profession that has high ethical standards to give him his major guidance in his self-employed position, as opposed to a position that is solely regimented by legislation and directives.

Dentistry of the future will continue to attract primarily the highly qualified student who is endowed with intelligence, an ability to think for himself, and one who does not shirk hard work and responsibility. The standards in the dental schools continue to be high, even when it means leaving spaces open in the entering class. Last year, 141 places were unfilled in the capacity freshman class of 3,748 in the 47 dental schools because the admissions committees in half of these schools were not quite satisfied with the remaining pool of applicants. This year, the schools expanded their classes by 64, but again, there were unfilled positions. While more students were accepted than last year, there were still 164 places which could not be filled with the quality of students that are now being demanded by many of the schools. The vacancies in the entering classes of 28 schools this year give some cause for concern because there are some well-qualified applicants who do not get into dental school. How-

ever, most of those who are highly qualified and are not admitted create this situation for themselves by applying only to one or two schools which are already receiving a very large number of applications from qualified students.

Less than twenty years ago, dental schools and some of the other professional schools were having a difficult time filling their classes. Following World War II, there was a big influx of applicants that fell to about a two-to-one ratio, but this has now fallen to about 1.5 applicants for each place in all of the dental schools. During these years, the schools have been receiving an excellent group of applicants and therefore, have been able to raise their admissions standards as well as their graduation standards. The schools also have adopted the policy that they want to accept only those students whom they are reasonably sure can meet the demands and the standards of the school. Fifteen years ago, some schools would fail as many as 50 per cent of their first year class. Now, there are schools in which all students meet the standards, but the average academic failure for the first year is only 2 or 3 per cent, which proves that the schools take pride in the quality of their admissions programs. Also, it shows that the counselors should advise only the capable students to consider dentistry as a career. Percentages alone do not show the difference in the mortality or attrition rates in the last fifteen years, for one must realize that the higher standards make it impossible for students to remain in school even though they might have been permitted to remain under the lesser standards that some schools readily admit they had fifteen years ago.

Many agencies are studying ways and means of attracting a greater number of highly qualified students so that all of the dental schools can operate at full capacity and hence, help produce the dentists who are going to be needed in the future. Studies we have made show that the counselors in the universities and colleges are rather ineffective in advising students to study dentistry—just as they have been reported to be ineffective in some of the other fields. It is understandable that only 8 per cent of the dental freshmen indicate that the college predental adviser had anything to do with their seeking dentistry as a career and only 5 per cent indicate that the high school adviser influenced them in this direction. Most dental students feel that the decision was primarily their own, but 48 per cent indicate that their own dentist had a great influence and a third indicate that their parents were effective influences. Data such

as these are causing a number of the agencies in dentistry to try to get career information into the hands of the dentist so that he can talk to his young patients, although of course, work is continuing toward making material on dentistry available to the university and high school counselors, even though we realize that most of them are loaded heavily with other administrative and teaching duties and that they also must try to be experts in a very large number of career areas.

The question is often asked as to what becomes of the seemingly qualified student who is not accepted by a dental school in the year that he takes his aptitude tests. We have made a study of these students, but there are so many factors involved that it is difficult to draw many conclusions. A few students who take the aptitude test never complete their application to any school. Schools reject some applicants who have done well on the aptitude tests because these students have not demonstrated a similar ability in their college courses; and others are rejected on first application but eventually are admitted one or two years later after taking more college work. Out of those applying to dental school, about 10 per cent appeared to be highly qualified and yet, they were not accepted during that year. About 100 of these were given acceptance by at least one dental school, but of those about two-thirds entered another profession and the remaining one-third had to give up a professional career for lack of funds or for some other reason. These figures are interesting too, for the reports also show that one-third of those entering another health profession from this qualified group had been rejected by the dental schools, so there are certainly many factors involved in the selection of qualified students.

In summary and in conclusion, I should like to refer again to the main topic of this paper—namely, dentist needs of the future, and what the future may hold for the dentist. We have described the trend in dental school enrollment, which shows that in spite of increased numbers of schools and expanded enrollments, we shall undoubtedly not be able to retain the same ratio of dentists to population as we have at the present time. Also, we may continue to see this ratio become even more critical. Ratios, in themselves however, may be very misleading. There are many sections of the nation where there are acceptable ratios, for such states as New York, Connecticut, Massachusetts, Oregon and Minnesota have ratios of one dentist to less than 1,400 persons; but on the other hand, South

Carolina has a ratio of one dentist to 4,824. The availability of dental service varies so greatly between the states that a large part of the question is distribution of the dentists.

Many regions are attempting to correct the inequities in their own area by finding ways of recruiting more practicing dentists. This type of program is probably even more important than the recruitment of more dental students or encouraging the expansion of dental schools and the creation of new ones.

In the past ten years, dentists have proven that the average dentist can increase his productivity of service by 29 per cent. Other figures indicate that the combination of increased population and increased demand for dental care just about absorb this increase in efficiency. This means that thus far, the members of the dental profession have been able to adjust their efficiency and their work loads in such a way that they have been able to keep abreast of the demands, even though the ratios of dentist to population have become less favorable and in spite of the greater dental consciousness on the part of the public. A survey by the Association's Bureau of Economic Research and Statistics also shows that today, 40 per cent of the dentists report that they have somewhat more demand for service than they can render; about 45 per cent indicate that there is a good balance between their ability to provide service and the demand for it; and the remaining 15 per cent indicate they could take care of more patients. The career seeking student and the counselors should be interested in these figures, for they predict the demand that the professional man may expect for his services and his talents.

While dental education is somewhat appalled at the challenge of the future for more service, the dental educators are adamant that they will continue to raise standards and that they will continue to graduate an increasingly capable group of students with each graduating class. There is certainly no thought of lowering the standards of the curriculum or the length of the program merely to produce a greater number of graduates. The whole philosophy of the dental profession is that the public must continue to have the services of the most highly qualified professional men that it is possible to produce.

Dental service of the future will be conducted by a greatly expanded personnel, for the dental profession will be able to increase the number graduating from dental hygiene schools, dental laboratory technology schools and dental assisting schools. These aux-

iliary dental personnel will be called upon to render a larger proportion of the dental service, and they must, of course, be supervised by the dentist. The Association is now on record to encourage dental schools to institute research programs designed to study the functions of the dental hygienist and the dental assistant with the thought that the dental team can be made to operate more efficiently, and hence, be able to meet whatever demands are made of it in the years to come. This is another example of the point made earlier in this paper, that dentistry is in the early stages of an evolution during which time the methods of dental care and the allocation of duties for rendering this dental care are about to be changed. This is all the more reason why the dentist himself must have the very best education and experience that it is possible for the dental school to provide. He must be well prepared scholastically and be endowed with a desire to make a real contribution, both to the health of the public and to his own profession, through his highly ethical standards of professional conduct.

Those who enter dentistry today must also be particularly adaptable in order to cope with the changes that will take place in the treatment of dental disease, in the wider utilization of auxiliary dental personnel, and in the various methods of improving both private and group practices. The dentist of the future will need to be research oriented, for even though he himself may not be involved in the conduct of research, he will need to read more widely and attend more refresher courses; and this will mean that he must be prepared to decide for himself as to whether certain newly developed methods are sound and worthy of his attention and use. Also, the dentist of the future must take the time to become active with his own professional colleagues in the activities and programs of organized dentistry. With the changes that are likely to take place in dental practice, he will want to take an active part in formulating the policies of his own Association, both at the local and national levels; and similarly, he will want the assistance of these agencies to assist him in his own growth. Probably never before has it been so important for the professional man to understand all of the objectives of his own profession and for him to seek the methods by which he may be able to be most effective in planning for the future. As he becomes active in his profession, he will gain first-hand knowledge of the accurate image that dentistry should portray to the public as well as to himself. Portraying the proper image of dentistry to

the public, as well as to the prospective dental student, will do much toward finding the solutions to the problems of the future. It will do much in guaranteeing to the public that the dental profession will be able to meet all of the demands that will be made on it. Furthermore, the proper image will do much in guaranteeing to the dental profession that there will continue to be an increasing number of well-qualified applicants for the study of dentistry and the auxiliary dental fields.

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Dental History and the Smithsonian Institution

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This paper was originally presented at the meeting of the American Academy of the History of Dentistry, Miami, November 1, 1957. The author, who was unable to be present, is indebted to Dr. George B. Denton, Chicago, who kindly offered to read it. It has been revised for the present publication.

On June 6, 1786, at the age of 74, died "The most high puissant & most noble Prince, Hugh Percy, Duke & Earle of Northumberland, Earl Percy, Baron Warkworth & Lovaine . . . Lord Lieutenant . . . of Middlesex & Northumberland . . . Vice Admiral . . . of all America, one of the Lords of his Majesty's most Honorable Privy Council, & Knight of the most noble Order of the Garter." Lord Hugh was obviously a man of parts—but what was probably the most important event of his life is not recorded on his tombstone: this was begetting out of wedlock a son who is known to history as James Smithson. In later years Smithson wrote, "on my father's side I am a Northumberland, on my mother's I am related to Kings, but this avails me not. My name shall live in the memory of man when the titles of the Northumberlands and the Percys are extinct and forgotten."* The titles of the Northumberlands and the Percys are by no means forgotten as yet, but the name Smithsonian is known to the ends of the earth.

* Quoted in Paul H. Oehser, *Sons of Science: The Story of the Smithsonian Institution and Its Leaders.* (New York: Schuman, 1949), pp. 2-3.

The Smithsonian Institution is now an extensive complex of scientific research laboratories and collections, art galleries, and museums. It comprehends such diversified activities as those of the Astrophysical Observatory, the Canal Zone Biological Area, the Freer Gallery of Art, the Bureau of American Ethnology, and the United States National Museum. Its scientific publications are read throughout the world, and its collections are seen by millions of people annually.

It had a most unusual beginning. For reasons that have never been fully explained, James Smithson, the son of an English duke, left his substantial fortune "to the United States of America, to found at Washington, under the name of the Smithsonian Institution, an Establishment for the increase & diffusion of knowledge among men." After much debate Congress accepted the bequest and in 1846 established the Smithsonian Institution. It was particularly fortunate that the Board of Regents at an early meeting elected Joseph Henry as the first Secretary and adopted his plan of operation: to increase knowledge by stimulating and supporting original research and to diffuse knowledge through a program of publication. In setting it up, Congress also provided that the nation's collections in natural history be transferred to the Institution. These collections had been accumulating since the Lewis and Clark expedition of 1803, but most of the specimens, for lack of a proper government repository, had gone to the American Philosophical Society in Philadelphia. In 1850 Spencer Fullerton Baird was appointed Assistant Secretary to take charge of the museum, and by 1866 the collections constituted the world's "largest and best series of minerals, fossils, rocks, animals, and plants of the entire continent of North America." In 1878, Henry died in his 81st year, and Baird became Secretary; far more interested in the collections than Henry had ever been, Baird is entitled to stand as the father of the United States National Museum. Baird, moreover, looked upon the Museum not as a collection of curiosities but as a place where a visitor might gain a knowledge of the fauna and flora of the country and also as a center of serious research. Collection, preservation, exhibition and education, and research: these were the functions of the Museum as Baird organized it, and they have continued to be so to the present day.

Baird was a naturalist and primarily interested in the natural historical collections, but the Museum quickly extended to other fields. One of the most important single additions came from the Centen-

nial Exposition in Philadelphia in 1876. At its close many of the exhibits were donated to the Smithsonian and in 1879 a new "temporary" museum building was erected to house this new material. Like so many government temporaries, this one, which has the distinction of being the cheapest building per cubic foot ever erected by the government in Washington, is still standing. Now known as the Arts and Industries building, it contains, along with Lindbergh's *Spirit of St. Louis,* the First Ladies' gowns, and a host of other historic and scientific objects, the collections and exhibits in the health sciences.

It was the collections received from Philadelphia that led in 1881 to the formation in the Department of Anthropology of a Section of Materia Medica headed by Dr. James N. Flint, Assistant Surgeon, U. S. N. At the end of the first year Flint reported that the collection consisted of 3,163 specimens, of which 2,150 were "arranged in cases and open to public inspection." Over the years the collection of materia medica has expanded greatly, so that it now contains approximately 15,000 specimens. But the Division has also extended its interests into other fields related to the health professions. The first curator, Dr. Flint, became particularly interested in developing collections dealing with primitive medicine, magic, and superstition, and in recognition of these enlarged interests the Section's name was changed to Division of Medicine in 1898. In 1912, following the retirement of Dr. Flint, Dr. Charles Whitebread, a pharmacist, became curator. Under his administration the activities of the Division were oriented increasingly toward history, and Dr. Whitebread developed an active program especially in the history of pharmacy, acquiring a significant collection of the equipment used in the manufacture and sale of pharmaceuticals. Among these may be noted especially the Old World Apothecary Shop, deposited in the Smithsonian Institution by the American Pharmaceutical Association in 1945, which comprises the finest collection of European pharmaceutical antiques in this country. It was also during his curatorship, in 1924, that the Division first opened its Public Health Gallery, a series of exhibits devoted to public health education, including dental hygiene. At this time the name of the Division was changed to Division of Medicine and Public Health.

Over the years the Division also acquired a number of historical objects relating to medicine and dentistry. The collection of original

patent office models especially, which was transferred to the Museum in 1926, contained a large number of dental items. Other accessions included a collection of early X-ray tubes, and memorabilia of W. T. G. Morton, Crawford Long, and William Gorgas. The exhibits, however, still related primarily to materia medica, and were, it must be admitted, rather stodgy.

In 1948 Dr. Whitebread retired, and in 1952 Mr. George B. Griffenhagen, also a pharmacist, was appointed in his place. Since then a concerted effort has been made to develop the collections still further, and with increasing emphasis on medicine and dentistry. With limited facilities, Mr. Griffenhagen renovated the exhibits in these fields, enhancing their appearance with color, light, and new labels. The exhibits in dental history which he prepared included a case on dental instruments; one on the manufacture of dentures; one, the gift of the American Dental Association, a group of prints showing some dentists and their patients; and one which displays the dental office equipment of G. V. Black. He also created other exhibits showing historical developments in various branches of medicine and pharmacy. In addition there is also a new Hall of Health, which opened November 2, 1957, exhibiting for the layman modern anatomical and physiological knowledge of the body in health. This Hall of course includes an exhibit on teeth, entirely distinct from our exhibit in the history of dentistry.

From this exposition you may understand how the Division of Medical Sciences, as it is now called, has grown from a collection of materia medica to a museum section devoted in large part to the history of the health sciences and professions. At the same time you will also no doubt understand why the pharmacy collection was relatively strong and the dentistry section relatively weak. This situation has been remedied in recent years with the active aid of the American Academy of the History of Dentistry. Much of the stimulus for this activity has come from the opportunity to portray the history of dentistry to the American public which our current program of expansion and renovation offers.

Congress has provided the money for a new $36,000,000 Museum of History and Technology, which is now under construction on the Mall in Washington. This will allow for much needed expansion in both the exhibit and storage space in the medical-historical fields. At the same time it is providing a great opportunity to recreate the

exhibits. In order to help us do the best possible job, the American Academy of the History of Dentistry set up a special committee under the chairmanship of Dr. C. Willard Camalier. This committee has rendered valuable advice on our exhibits, for which we are grateful indeed. It has also been instrumental in helping us to obtain a number of valuable additions to the collections, notably a substantial proportion of the dental-historical material formerly at the University of Pennsylvania. This donation and others, from individuals, institutions, and companies, have provided the chief basis for three new exhibits on the history of dentistry which have just been completed. These will be moved to the new Museum when it is ready to open, there to join other dental exhibits now in the planning state.

As Curator, I look forward to the continued help of the American Academy of the History of Dentistry and ask you to give them your support. There are still gaps in our collection of historical dental instruments. The exhibits of the historical development of the profession are always subject to future improvement. We also need additional instruments for our reference collection, so that members of this Academy and others interested in the history of dentistry will be able to study here various stages of the development of dental instruments. I would therefore like to ask those of you who may have old instruments of historic value, whether your collection is large or small, to think of the Smithsonian Institution should you ever wish to dispose of them. And I also ask you, if you know of other dentists, or perhaps schools of dentistry or other institutions related to dentistry, who have old equipment of historical value, to think of the Smithsonian. This does not mean that I want you all to pack up everything you cannot use any more and send it off to me. There are limitations on what we can accept, if only because our storage space is not large enough to allow extensive duplication of material we may already have. Rather, please write, telling me what you have, and I will be only too happy to let you know whether or not we would be able to add it to our collections. Finally, I should like to remind you that our collections are part of the *National* Museum, which even now is visited annually by nearly two million people, and that the new Museum of History and Technology will be the largest museum of the history of science in the country. We want our exhibits to be educational and historically accurate, and we want them

to show the significant steps in the development of dentistry. With your help they can do so. This is a unique opportunity not only for us but also for you to explain to the American people something of the history of dentistry and to present to them an exhibit worthy of your profession.

Smithsonian Institution
United States National Museum
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Consideration of the Possible Etiological Role of Viruses in Cancer

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Following graduation he served one year as in instructor at the University of Iowa leaving to conduct research at The Rockefeller Institute from 1925 to 1949. He was associate director at the Merck Institute, 1945 to 1952. He is now at The Rockefeller Institute.

Cancer is a biological phenomenon occurring in many and perhaps all species of animals and it may be assumed that mammalian, and probably most avian, tumors are broadly comparable to those in man. The pattern of tumors and the relative incidence of certain types of cancer, however, vary with species. Thus, though relatively common in man, mammary cancer is rare in cattle; prostatic and uterine cancer are rare in dogs; and gastric and lung cancer are rare in all species except man. Lymphosarcoma and leukemias, on the other hand, are common to most species of animals including man. It seems clear that man is probably just as special a case as any of the species of domestic animals in the pattern of incidence of his common tumors.

Despite the similarity of cancer in animals and man, the matter of directly determining its cause has been limited to a study of those tumors occurring in birds and animals aside from man. The reason for this is that, by and large, each cancer is specific for the host in which it naturally occurs and can be transmitted or transplanted only to other members of the same species. In the cases of tumors of rab-

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bits, mice or chickens, for instance, this restriction does not limit the studies of the cancer investigator and direct tests for the presence of a causative agent can be made by the inoculation of tumor material into normal individuals of the same species. In cancer in man, however, this direct approach to determine a causative agent cannot be applied because of the risk to the life and well being of the human beings upon whom attempts to transmit cancer experimentally would have to be made. Determination of the nature of the causative agents or factors of human cancer must therefore be made by more indirect approaches and by applying the findings with animal cancer to man where they seem to have a possible bearing. It is because of the greater facility with which animal tumors can be studied that our knowledge concerning the possible role of viruses in cancer is largely limited to findings with animal and bird tumors.

Before going further I shall define several terms that will be used extensively in this discussion. The term "tumor" will be used in referring to any proliferative new growth, either malignant or benign. The term "cancer" will be used in its broader sense to refer to malignant neoplasms of any cell type. The term "virus" will be used in its ordinary sense to indicate an ultramicroscopic, extrinsic infectious agent. Since I want to emphasize proven etiological relationships, I shall limit the examples used in this discussion to tumors of animals exclusive of man.

Historically, the view that viruses may be important causes of certain types of malignant disease goes a fair way back into medical history. In 1896, Sanarelli observed an outbreak of illness among the rabbits in his laboratory in Uruguay. The disease was characterized by the development of multiple tumors over the skin of the body and about the eyelids and nose. It was eventually named infectious or rabbit myxomatosis. Affected rabbits died in from 8 to 14 days and on microscopical section the tumors appeared to be myxosarcomas. Two years later Sanarelli[1] proved that a filterable virus caused this disease. Actually its rapid and regularly fatal course labeled it more as an acute infection than as a neoplastic process, even though the tumors considered individually did give the impression of being cancerous. Infectious myxomatosis is not considered today as an example of a virus-induced tumor, but it did serve the useful purpose of indicating, for the first time, that a virus could cause a proliferative process resembling a tumor. In 1908, Ellerman and Bang,[2] working in Denmark, demonstrated a virus as the

cause of leukemia in chickens. This observation did not attract the attention it probably deserved from the standpoint of cancer research because of the fact that at the time leukemia was not generally thought of as a cancerous process. It remained for Rous in 1911[3] to demonstrate the first virus-caused cancer. This was a sarcoma of chickens. The agent responsible for inducing these growths had all of the characteristics of a filterable virus and the growths themselves were true malignant tumors which metastasized and eventually killed their hosts. This discovery by Rous is generally designated as the event which introduced the era of viral tumors. Unfortunately the Rous discovery stirred terrific controversy among oncologists, and the controversy continues to some extent even today. While no one could deny that the fowl sarcoma was a true neoplasm, some contended that because it was a tumor of a bird, it was in quite another category than would be a mammalian tumor and hence was meaningless from the standpoint of cancer. Also it was argued that the very fact that an extrinsic causative agent could be demonstrated served as indication that the growths produced in chickens could not be true tumors and that, even though they looked and acted like cancers, they had to be considered as something different and apart from them. Dr. Rous has told me of the visit of a distinguished British oncologist to his laboratory in the early days. This man, when shown a fine example of the chicken tumor, is supposed to have said, "But my dear fellow, this cannot be cancer because you know its cause."

Despite the objections of some to the interpretation of Rous' discovery, it had a very profound effect and set investigators to looking for other examples of virus-caused new growths in all sorts of animals. The list of those found has now grown to contain about 20 different tumors in nine species of animals. The list of these tumors is given in Table 1.

While a number of the animal tumors included in the table are benign growths and do not progress to kill their hosts, some of them are malignant or have malignant potentialities. The rabbit papilloma,[4] for instance, which starts out as an entirely benign growth, eventually becomes malignant and in most cases ends up as a frank cancer[5, 6] sometimes causing the death of the animal. The mouse mammary cancer[7] and the frog kidney cancer[8] are frankly malignant from the outset and, of course, mouse leukemia, both that of Gross[9] and that of Friend,[10] are malignant killing processes.

TABLE 1

1898	Rabbit myxomatosis (Sanarelli)
1908	Fowl leukemia (Ellerman & Bang)
1911	Fowl sarcoma (Rous)
1920	Bovine papilloma (Magalhaes)
1932	Canine oral papilloma (DeMonbreun & Goodpasture)
1932	Rabbit fibroma (Shope)
1933	Rabbit papilloma (Shope)
1933	Fowl lymphomatosis (Furth)
1934	Canine lymphosarcoma (DeMonbreun & Goodpasture)
1936	Rabbit oral papilloma (Parsons & Kidd)
1936	Mouse mammary carcinoma (Bittner)
1938	Frog kidney carcinoma (Lucke)
1946	Fowl lymphoid tumors (Burmester et al.)
1951	Equine cutaneous papilloma (Cook & Olson)
1951	Mouse leukemia (Gross)
1953	Mouse parotid tumor (Gross)
1953	Squirrel fibroma (Kilham, Herman & Fisher)
1955	Deer fibroma (Shope, Mangold, MacNamara & Dumbell)
1957	Mouse leukemia (Friend)
1957	Polyoma (Stewart & Eddy)

It is the demonstrated existence of the group of viral animal and bird tumors I have just outlined which is responsible for the growing belief during the past few years that viruses may also play a causative role in at least some human cancers. A question which has been raised in the minds of many is whether there is any logical or philosophical reason for considering man a species apart from other animals as regards the causation of his tumors. If viruses can serve as the cause of cancer in chickens, rabbits, mice, and frogs, for instance, there seems to be no reason for believing that they might not act similarly in man. After all, a number of the proven viral tumors of animals imitate the behavior of human tumors of unknown etiology in their cellular make-up, in their patterns of metastasis, in the manner in which they regress or kill, and some of them, at least, in the comparative ages at which they tend to appear. We have reached the point, it would seem, where it is somewhat unrealistic to contend that human cells are something apart from the cells of other species of animals in their capacity to react to cancer-causing viruses. Man is no stranger to the filterable viruses, and these small infectious agents are the cause of many of his both serious and minor illnesses just as they are the cause of many of the diseases suffered by other animals and birds. Cancer as we know it today is of two types as regards

causation; it is either cancer of "known etiology" and has a virus as its cause, or it is cancer of "unknown etiology." It would be strange indeed if an etiological line of distinction should exist between tumors of animals, many of which fall into the "known etiology" group, and those of man, all of which are at the moment in the "unknown etiology" group.

It has been intimated earlier in this discussion that evidence for a viral causation of animal cancer is relatively easy to obtain merely by the administration of filtrates of animal or bird tumors to hosts of the same species. With certain of the animal tumors, however, various indirect procedures have had to be resorted to in order to demonstrate their viral causation. The mouse mammary cancer, for instance, is caused by a virus present in the milk of certain strains of mice.[7] The offspring of such strains of mice, or other baby mice foster-nursed by females of this line, acquire virus from the mouse mother's milk by nursing. However, they do not promptly come down with breast cancer—instead they remain apparently completely normal until they have reached middle age before they show outward manifestations of cancer. Thus, in this situation, the development of cancer is dependent not only upon infection with a virus but also upon the coincidental presence of some age-associated factor or factors. There is good evidence that hormonal changes with age as well as genetic features constitute the factors which determine the time of development of breast cancer by mice infected with the specific virus.[11, 12] The virus acquired in the milk is seemingly not directly carcinogenic since for a year or longer it exists as a harmless latent infection within the infected mouse. Only with advancing age does some physiological or hormonal change occur which either induces the latent virus to become carcinogenic or the host sensitive to its carcinogenic effect. Here then in the case of mammary cancer of mice, one has a tumor that originally had all of the earmarks of being a spontaneous tumor of unknown etiology, although in reality it was eventually proven to have a virus as its inciting cause.

In like manner, the mouse leukemia described by Gross is transmitted from mother to offspring either by way of the egg or very soon after birth and it too, like the mouse mammary cancer, does not become evident until the affected mouse reaches a certain age and probably a certain specific hormonal situation.[13, 14] Thus in these two highly fatal neoplastic diseases of mice, the causation of

the actual cancer is a complicated process in which the virus plays only part of the role. Because of the complicated nature of their causation, both the mouse mammary cancer and mouse leukemia were worked with for years as malignancies of unknown etiology. It required investigators with imagination, originality, and astuteness to unravel finally the causes of these two diseases and to demonstrate in each the primary role of a filterable virus. Literally hundreds of thousands of mice were used in the work and the wonder is that the correct answer was finally arrived at.

There are certain animal tumors that we know to be caused by viruses in which the virus cannot be detected by any of the usual direct techniques that can be applied. The papilloma in domestic rabbits is an example of such a tumor. In papillomas of the wild cottontail rabbit, in which papillomatosis occurs as a natural disease, virus infective for either cottontail or domestic rabbits can be quite regularly demonstrated.[4] Such virus applied to the scarified skin of either type rabbit results in the appearance of beginning growths along the scarification lines after incubation periods ranging from 10 days to 3 weeks or longer. These growths gradually increase in size, eventually becoming 2 to 3 cm. in height and diameter. They are ordinarily fleshy at their bases and keratinized above the fleshy base. In some rabbits, after persistence for 6 to 9 months or longer, certain of the papillomas undergo malignant change and become cancers.[5, 15, 16] These metastasize and may eventually kill their hosts. An interesting feature of these growths in domestic rabbits, both the papillomas and the cancers, is that virus cannot be detected in them by any direct techniques that can be applied.[4, 17] Such growths ground up and suspended in saline in the usual manner of preparing virus suspensions yield preparations that are completely noninfectious for other rabbits to which they are administered. So far as one can tell by direct infectivity tests, the tumors contain no virus and are completely innocuous. However, these are tumors that were originally initiated by infection with known papilloma virus from the wild cottontail rabbit and in cottontails this virus does induce papillomas from which active virus can be extracted. It would thus appear that although virus of wild rabbit origin can infect domestic rabbits and cause in them papillomas that progress to cancer, the virus, in a form that we can recognize by infectivity tests, early disappears from them. However, it can be determined indirectly by using wild rabbit virus and various immunological tests [18, 19, 20]

that virus is still present in the growths though no longer in a form capable of infecting other rabbits, either wild or domestic ones. It is present there in what has been termed a "masked" form.[19] No one yet knows for certain the mechanism involved in the masking of rabbit papilloma virus. However, the virus in its masked state is not capable of infecting new hosts though it evidently maintains its ability to exert an antigenic effect upon the host in which it resides.

We thus, in the case of the domestic rabbit papilloma and carcinoma, have a situation in which tumors known to be of viral origin are to all outward appearances tumors of unknown etiology. By this I mean that if a domestic rabbit with either the benign papilloma or a malignant cancer arising from a papilloma were given to an investigator for study, he would have no way of determining that they were virus tumors. Deprived of a history as to the method by which the tumors had been initiated and forced to use only currently standard techniques for virus detection, he would have to conclude that these tumors in the domestic rabbits were of unknown etiology and I doubt that he would even suspect them of containing a virus in masked form.

My reason for spending this much time in discussing the Bittner mouse mammary cancer, the Gross mouse leukemia, and the papilloma and carcinoma in domestic rabbits is to indicate to you that the role of viruses even in some animal cancers is a sly and elusive one. These three cancer viruses have been extremely coy in concealing their natures and identities from the prying investigations of tumor workers. Two of them, the mammary cancer agent and the leukemia agent, have for long protected themselves from detection by the length of time they lie innocently latent in a host before inducing manifest cancer. Infecting their hosts at a very young age and not causing visible cancer until, in some cases, as long as a year or more later, the relationship between cause (virus infection) and effect (cancer) was not readily recognized. The third virus, that of the domestic rabbit papilloma, has protected itself even more thoroughly from detection by assuming a masked form in which its presence in a tumor is rendered completely occult so far as any direct test for it is concerned. I shall refer to these three viruses again when I consider the difficulties that may be anticipated in any later efforts to establish a viral etiology in human cancer.

Certain chemical substances such as methylcholanthrene, benzpyrene, tars, and some other substances are known to be carcinogenic

and to produce cancer in animals and probably in man when administered by appropriate techniques and for adequate periods of time. How the action of these chemical carcinogens in producing malignancy fits in with the view that viruses are etiologically essential in carcinogenesis is a little difficult to rationalize. However, there is evidence from animal work that certain of these chemical carcinogens enhance the malignant potentialities of some of the tumor viruses. Thus Ahlström and Andrewes[21] found that rabbits that had received a previous injection of tar reacted to fibroma virus in a most unusual manner. When the virus was injected into the skin, it produced tumors at each site of inoculation which, instead of regressing, as they do in the case of normal rabbits, persisted as malignant-appearing new growths for unusually long periods of time. When the virus was given into the blood stream of rabbits that had received tar, it produced a generalized and widespread growth of tumors which sometimes killed the animals. Normally the fibroma virus is completely without any grossly observable effect when given into the blood stream.[22] The administration of tar to a rabbit thus converts it from an animal which reacts not at all to fibroma virus given by way of the blood stream to one in which the virus induces a spreading, multiple, and sometimes fatal tumor disease.

Tar also alters the reactivity of rabbits to the papilloma virus. Thus Rous and Kidd[6, 23] observed that when rabbits, to whose ears tar had been applied, were injected into the blood stream with papilloma virus, cancers appeared promptly over the areas of skin to which the tar had been applied. It should be pointed out that normal rabbits injected with papilloma virus by way of the blood stream usually develop no tumors of any sort,[4] either benign or malignant, and the tar, as applied in the experiments of Rous and Kidd, was not of itself carcinogenic. In these experiments, therefore, it was shown that animals receiving a combination of tar and the papilloma virus developed malignant cancer forthwith. Ordinarily papilloma virus applied to the skin of rabbits induces, initially at least, benign papillomas, and the malignant change to cancer does not take place until some 8 to 12 months later[4, 5] It is apparent, therefore, from the experiments of both Ahlström and Andrewes, and Rous and Kidd, that the presence of tar in an animal materially alters the animal's reactivity to at least two tumor viruses and that this alteration is in the direction of enhancing the malignant properties of the tumors the viruses cause.

Duran-Reynals has similarly demonstrated the effects of chemical substances in altering the reactivity of animals to viruses. Duran-Reynals used viruses that are not ordinarily thought of as tumor-producing agents. In one set of experiments, he observed that methylcholanthrene applied to the skin of chickens that had recovered from fowl pox virus infection caused first the recurrence of the fowl pox lesions and later the development of frank cancers on the treated areas of skin.[24] In like manner, in another set of experiments, he observed that mice recovered from infection with vaccinia virus later developed cancers at the sites of the vaccinia scars when the animals were given cortisone and painted with methylcholanthrene.[25] These experiments, carried out with two different viruses, indicate that, under certain conditions sometimes involving hormonal stimulation, latent viruses can be activated by a chemical substance and that cancer can result seemingly from the combined action of the chemical substance and the virus on the cells of the host.[26] It is noteworthy, in the case of Duran-Reynals' experiments, that neither the fowl pox nor the vaccinia virus are ordinarily considered to be cancer-producing agents.

Stanley has speculated[27] that while chemical carcinogens and physical agents, such as ultraviolet and x-irradiation, supposedly cause cancer by a direct effect upon the genetic apparatus of the cell, it might be just as reasonable to assume that they act instead on viruses latently present in cells and that these activated viruses then serve as the cancer-producing entities. This speculation is not out of line with Duran-Reynals' findings. Also it furnishes a rationalization which brings into accord the seemingly divergent views concerning the possible roles of chemical and physical agents and viruses in carcinogenesis.

This concludes my description and discussion of a group of animal tumors for which there exists good experimental evidence that filterable viruses play etiological roles. What good is this mass of information going to be to us in determining whether or not human cancer may also be of viral origin? In studying animal tumors, as I have indicated, proof of a virus cause is relatively simply arrived at and usually entails merely the injection of animals of the same species with cell-free material from the tumor. Since this procedure cannot be followed in the case of human cancer, experimental oncologists are at once deprived of the use of the very tool which was successfully exploited in elucidating the role of viruses in animal cancer. And

even if human volunteers could be used in cancer research to determine the etiology of human malignancies, one wonders whether much might be achieved if it should turn out that the causative agents were like those causing mouse mammary cancer or mouse leukemia, for instance, where the virus must be administered soon after birth and does not exert its carcinogenic effect until middle age. This would mean, translating mouse age to human age, that an investigator would have to wait from 35 to 50 years to learn whether his experiment was successful or not. I believe that the necessity for such a long waiting period would discourage most workers in the cancer research field if human volunteers were to be the only method of determining whether or not viruses played a causative role in human cancer.

And even a more discouraging thought in connection with identifying a virus as the cause of human cancer is the possibility that it might be in a masked form as is the papilloma virus in the tumors it causes in domestic rabbits. If this were to prove to be the case, I doubt that the cause of human cancer would ever be determined—at least not with the tools for viral detection that we now possess.

But there are leads furnished by our knowledge of viral animal cancer that may prove helpful in determining whether or not viruses also play a role in human cancer. These are of an indirect character and are dependent upon the use of animal viral cancers as model systems through which information possibly applicable to human cancer may be obtained. At the moment the information to be derived from the study of animal cancers as model systems is limited and much more work will be required to make them of maximum value for use in the study of cancer in man. Some progress has, however, already been made and I should like briefly to discuss this with you next.

One of the new tools by which tumor investigators can recognize viruses within cancer cells is the electron microscope. In a number of the known viral animal tumors, tiny bodies of distinctive appearance have been seen.[28-36] By appropriate biological tests in susceptible animals, these bodies have been identified as cancer virus particles.

The identification of virus bodies of this type in known viral tumors has led investigators to search assiduously for similar characteristic bodies in human tumors. In a number of instances, particles visible by means of the electron microscope have been found in

human cancer material.[29, 32, 33, 37-41] However, proof that these bodies actually represent the causative agents of the cancers in which they are found is completely lacking due to the fact that biological tests of their cancer-producing activities cannot be conducted. These bodies have, therefore, been referred to as "virus-like" and further work will be required to tell us whether or not they actually play any role in the causation of the cancers in which they are observed.

Numerous attempts have been made to establish hypothetical human cancer viruses in experimental animals or in tissue culture but in no case has success been achieved. In like manner, serological tests or work involving the use of immune responses, has not succeeded in establishing that a causative virus is present in any human cancer. Thus, aside from the information supplied by the electron microscope that "virus-like" bodies may be present in human cancer cells, there is yet no concrete evidence that viruses play a role in human cancer as they are known to do in certain animal cancers. It has, of course, been established for years that viruses cause two benign tumors of man; one of these is the common wart[42] and the other is a tumor-like condition known as molluscum contagiosum.[43] "Virus-like" bodies, visible by means of the electron microscope, have been observed in both of these tumors.[44]

There are other approaches, suggested from work with viral animal tumors, that have not yet been fully exploited in work with human cancer. Among the leads suggested by model systems with viral animal tumors are the use of human cells from various tissues grown in tissue culture. It seems possible that, if an exhaustive enough trial of human cells of enough different types is made, some tangible evidence of causative viruses in human malignancies may be revealed. Another possible approach to the problem of determining the importance of viruses in human cancer is through the use of Toolan's hamster pouch method of maintaining human tissue[45] and the attempted infection of these normal tissue implants with filtered human cancer material. Still another approach not yet tried so far as I am aware is the use of fluorescent antibody prepared from the serum of advanced cancer patients to test for the presence of virus within the cancers of such patients, using the procedure developed by Noyes and Mellors,[46] to detect the distribution of papilloma virus in the growths of wild cottontail rabbits. A very promising possible approach is suggested by Greene's experiments of several years ago.[47, 48] In these he found that various types of embryonic

skin exposed to wild rabbit papilloma virus developed tumors of characteristic papilloma morphology when implanted into the brains of rabbits or other experimental animals. It requires little imagination to grasp the tremendous possibilities presented by this technique for demonstrating the presence of viruses in human cancers should they exist there in an infective, non-masked form. Greene has reported[49] exploiting the method on a limited scale with human tumors. He succeeded in demonstrating the presence of viruses only in molluscum contagiosum and the Straus-Bunting wart, two tumors already known to be of viral etiology. It is apparent from Greene's findings, preliminary though they are, that his method deserves thorough and extensive study as a means of demonstrating the possible presence of viruses in human cancer.

These are just a few of the approaches suggested by model systems of known animal viral tumors that might be used in demonstrating the presence of causative viruses in human cancer without recourse to the human subject as a test animal. Doubtless many other approaches will be devised in the future as new techniques are developed and new ideas evolved. The matter of proving the presence of causative viruses in human cancer, should they exist, may not therefore be as futile a task as it seems at first sight.

A possible limiting feature to the application of the approaches suggested above has been touched upon earlier. If some of the hypothetical human cancer viruses should prove to be masked as is the papilloma virus in domestic rabbits, or hormone or age dependent as are the mammary cancer and the leukemia viruses of mice, then the approaches suggested above would probably not apply to them and new ones would have to be devised.

Many of you will no doubt wonder why it makes any difference at all whether human malignancies are or are not caused by viruses and may consider the discussion that I have indulged in rather academic. Actually it is not academic at all because the proven demonstration that viruses are etiologically essential in human cancer would quite alter the flavor of work designed to control cancer. It would open the tumor field to that vast array of procedures that we now use in successfully controlling our infectious diseases and would enable us to take advantage of such things as chemotherapy, antibiotics, vaccines, and antibodies against an extrinsic infectious agent, instead of having to deal with the more hopeless situation of the autonomous growth of cells. No one, of course, at this point can say whether or

not any of these procedures would pay dividends, but it would at least be refreshing to have a new biological approach to cancer prophylaxis and treatment that might have some prospect for success.

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Unsolved Problems of Dental Care

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The opportunities that lie before the student of dental care are as endless as they are in any other activity which deals with illness. This statement is all the more true because dentistry has moved forward with great strides in the last few decades. The dentist who is satisfied with the status quo will slip down the hill which he has only just climbed, and his position will be more noticeable in view of the momentum with which he has been moving forward. Dentistry, having occupied a position far to the rear, has been catching up but, while solving problems successfully along the way, it still has a distance to go on the road to the millenium. So too has the practice of medicine and surgery, with which dentistry is now inseparably joined. My part in this symposuim* under the general heading of "The Opportunities of Dentistry in Hospitals," is a discussion of general principles; these are readily outlined by reference to a logical as well as historical examination of the possibilities which might be expressed as unsolved problems of dental care.

Here are some leads which might help the planner as he moves forward to better dentistry in hospitals; they are found under the various classifications of hospital service and can be invoked in the consideration of specific problems under the following headings. Hospitals are concerned with (1) Construction and reconstruction; (2) Equipment (movable and stationary; heavy and light); (3) Organization; and (4) Administration.

Under *construction* we have the unsolved problem of space allocation for the best dental service. We have "sold" the idea of dental care in hospitals in comparatively few instances, as one can see by looking at the record. There has accumulated much literature on this subject in recent years but, while there is frequent agreement "in principle" as a result, what do we find in actual practice? Has the dentist reached the point where his voice will be equally respected at the planning table with that of his colleagues on the medical staff when such matters are being considered? And, if a mistake was

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made in the beginning, when the creative opportunity was at its best, what can be done by reconstruction and remodeling of existing structure in order to get a better balance of medical-dental service? If the dawn came only after the hospital was built, what principles should guide us in the matter of rearrangement to bring matters up to date? For lack of time and space I must leave details such as location, orientation, absolute and relative space, space relationships, accessibility, and lighting, to your imagination. You will get the answer to these questions if you will follow the general principles of balanced construction and reconstruction for all branches of diagnostic and therapeutic service. Whether you will be succesful in applying them to your particular situation is another matter and that is why I consider this one of the remaining unsolved problems.

Let us consider *equipment.* In this respect you have done well, but can any dentist consider this problem solved while the mechanical, electrical, and chemical laboratories are still producing new and better inventions? What about the pharmacological laboratories, and the special laboratories which improve our prosthetic devices? Are we satisfied with the materials at hand for dental remodeling or reconstruction? The matter of expense will never disappear from the consideration of such items in the budget as equipment, but the obligation to solve this problem cannot be reduced by pessimism so long as there remains room for improvement.

Concerning *organization,* we are in a somewhat happier position. Having borrowed a leaf from the staff physician's book we try to follow his example, stratifying our dental staff correspondingly and, I hope, with equal dignity. The same holds for attendance and for discipline, for rewards and for punishments. Perhaps because the dentist earns his living by "piece-work," but for whatever reason, we are seeing a wholesome tendency to establish dental service on a full-time, or at least part-time, basis. Since this is all to the good so far as the patient is concerned, the extent of its spread is still among the unsolved problems of organization. We have not yet solved the problem of centralization or decentralization of dental effort—such things as library, laboratory and the like—so this too must remain on our minds for the time being, whether or not you look upon dentistry as a specialty of medicine. The central library and the laboratory have long ago solved this problem.

Under organization, we must also consider the position of the dental hygienist in the group; the place of the dental surgeon in the

general operating rooms of the hospital; the relation of the dental surgeon to the division, or department, of general (or special) surgery; and the place of the dentist in the councils of the hospital as, for example, in the Medical Board.*

In the matter of *administration* we find the least of our unsolved problems, though unsolved it remains. To appoint or not to appoint, to promote or not to promote, to limit or not to limit the term of appointment, to obtain equal rights in budgeting, recording, reporting, and obtaining recognition commensurate with the service—these require perfecting, if dentistry is to emerge completely from its cocoon and take its place among all other specialties in the hospital. Dentistry too must overcome such obstacles as negativism, inertia, vested interests, loyalties, shortages of all things and the like. There are many leads in the policies, rules and regulations, and attitudes which prevail for your colleagues on the medical staff as well as for you. Administratively you must not ask for less, and the more you get the sooner will the hospital confer dignity as well as authority and responsibility on you. Far more than for construction, and perhaps for equipment and organization, you will be judged by your administrative talents as well as by your clinical talents. I find it difficult to deny myself the pleasure of recording, at this point, my personal good fortune in dealing with the dental leadership, as well as the rank and file, of those hospitals with which I have been associated over the years.

We can also pursue our classification of unsolved dental problems by considering the aims of hospital service generally. These are prevention, diagnosis, cure, rehabilitation, teaching, and research. Prevention in dentistry as a day-to-day necessity is proved by all of the other aims here enumerated. Thus far, in the incomplete status of the effort, there is no evidence to show that any physician or dentist has been put out of business, so to speak, by any advance in preventive medicine or dentistry; the effort remains noble. The problem of prevention is far from being solved, though great strides in this direction already have been made and are continuing.

In diagnosis we stand high in dentistry, if only because we deal here with more tangible and more obvious pathologic phenomena. However, we still depend too much on the patient for the stimulus to diagnose, treat, and investigate. As a psychosomatic unit, the pa-

* It is interesting to record that Dr. David Tanchester, chief of the Dental Department, Montefiore Hospital, New York City, is now president of its Medical Board.

tient is still the most reliable diagnostic tool, and particularly so in cases where the lesion is concealed. The dental X-ray has been under attack of late, or at least under scrutiny, for possible pervasiveness, and this is a warning to us that a problem which we considered completely solved may, after all, be in need of further work in the physics laboratory. Under diagnosis one cannot omit such items as medical-dental relationships, and all those team-work relationships which contribute to, and support, a diagnosis. There is no department of the hospital which does not have something to offer at times in this respect, and the department of nutrition is not the least among them.

What I say here about diagnosis is equally true of therapy. The element of applied pain in the course of therapy is still in the minds of patients, if not in the minds of those who serve them. How to deal with, in order to prevent, deformities of the jaw by the application of conservative preventive and therapeutic methods still remains a problem to be solved. If we are in a position to choose between the lesser of evils, how much more can we minimize it? Pharmacology still has much to offer us in the way of prevention and treatment. We still have to come to terms with the so-called head-and-neck and plastic surgeons in order to give the best to our dental patients. In the matter of rehabilitation we have advanced far, and will undoubtedly add to our laurels in this area, but when we speak of unsolved problems let us not forget that our services are still limited to those who can afford to pay for them. The others are an unsolved problem to us.

Teaching, and particularly research, can never be finite while problems under any heading remain. But here too we can take a leaf from the scientist's book and do all we can to share knowledge and improve on it. The problem is to place a certain emphasis by qualified men on those by-products of dental care which make for steady progress and scientific continuity. Classrooms and laboratories are involved in such activities, and where do we find enough of them with talented staff available? When we speak of unsolved problems of any kind we naturally look to the laboratories, and to the pioneering spirits gifted with creative power who work in them, for salvation. Herein lies another problem—where to find such men and, finding them, how to obtain the wherewithal to support their work.

But this does not exhaust the list of opportunities. The unsolved problem of dental economics in relation to hospital economics, and

to medical economics generally, is ever before us and it is particularly urgent in view of the "non-urgent" character of the work of the dentist in comparison with other hospital work. Prepaid health insurance which will include dental insurance remains very much a problem. Volunteer service and its limitations still handicap our efforts somewhat, valuable though it seems to be. We do not have enough dentists to perform the full job required of us. But recent dental history leaves plenty of room for optimism. Dentistry has performed well in its search, its eternal search, for progress. The increased span of modern life will undoubtedly add to the requirements of a more difficult geriatric type of dental problem and, though we shall lean heavily on our preventive teachings, we shall continue to seek improved ways of bringing relief to those in whom prevention has failed. Public education is not the least of our partially-solved problems but we have reason to look forward here too for better methods and better results.

Formidable as these many problems seem at times, when viewed in the mass, we will somehow manage to overcome them if we can win enough time, patience, money, facilities, energy, talent, and creativeness for our researches. The momentum of recent dental effort will help because it is as convincing as it has been successful, and it augurs well for the future. So long as we have an awareness of the unsolved, the incomplete, and the unsatisfactory, we will do our duty in helping to make this dental world a better place to live in.

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The American Association for the Advancement of Science

Proceedings of Section Nd (Dentistry)

REIDAR F. SOGNNAES, D.M.D.

In keeping with the general program scheme of recent years, Section Nd again chose to organize a multi-disciplinary symposium on a topic basic to oral biology, namely *Fundamentals of Keratinization.*

The two session symposium held in the Biltmore Hotel, New York City, December 30, 1960, was organized under the direction of Dr. Earl O. Butcher, New York University School of Dentistry, and with co-sponsorship by Section N (Medicine); the International Association for Dental Research, North American Division; the American Dental Association; and the American College of Dentists. This was the 127th meeting of the AAAS.

During the morning session (moderated by Dr. Butcher, Program Chairman, Section Nd) keratinization was discussed with respect to (1) sequential mechanisms involved (A. G. Matoltsy, University of Miami); (2) distribution of SH and SS reactions in various vertebrate keratins (R. J. Barrnett, Yale University, R. F. Sognnaes, UCLA, and G. Pettengill, Harvard); (3) tissue culture keratinization (G. Szabo, Harvard); (4) ultrastructure of keratinizing tissues (J. A. Rhodin and E. J. Reith, N. Y. University); and (5) two presentations on the effects of Vitamin A on keratinizing tissues (H. A. Bern and D. J. Lawrence, University of California, Berkeley; and J. P. Parnell and B. Sherman, State University of N. Y.).

The afternoon session (moderated by Dr. Sognnaes) began with (1) a discussion of physical properties of cornified epithelium (I. H. Blank, Mass. Gen. Hosp.) and dealt with structural and chemical aspects of oral epithelial derivatives, namely (2) keratinization of the oral mucosa (J. Meyer and H. Madak, University of Illinois); (3) keratin formation in dental cysts (J. J. Pindborg, Royal Dental

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It has been the custom that abbreviated proceedings of the annual meeting of the AAAS be published in the JOURNAL. Dr. Sognnaes, secretary of Section Nd and Dean of UCLA School of Dentistry, compiled the report.

College, Copenhagen); (4) environmental and genetic effects on oral cornification (C. J. Witkof, Jr., Natl. Inst. Dent. Res., Bethesda, Md.); (5) ultra-structural demonstration of the extracellular deposition of enamel (M. L. Watson, University of Rochester); and (6) the microchemical constituents of the enamel protein (K. A. Piez, Natl. Inst. Dent. Res.).

The symposium was well attended, at times filling to capacity the Biltmore Suite (150) and resulting in considerable audience participation. During the morning session discussion concerned the definition of keratinization versus cornification, and the appropriateness of the classical terms of "hard" and "soft" keratin. On the basis of the distribution of SH and SS reactions a classification by site and origin was suggested as most appropriate by one discusser (Dr. Barrnett, Yale). During the afternoon session the discussion of the enamel protein resulted in the rejection of this curious epithelial product as either a typical keratin or collagen. It arises extracellularly, unlike typical keratins, and it contains no hydroxyproline, unlike collagen. One discusser (Dr. Pautard, Leeds University of England) even suggested that the enamel matrix may resemble a silk protein in structure. This may have important implications regarding concepts of calcification.

In addition to its own program, Section Nd co-sponsored a meeting on "Career Opportunities in Medicine and Dentistry" arranged by Alpha Epsilon Delta and attracted a large audience on the morning of December 29 in the Music Room of the Biltmore Hotel. Following introductory remarks (C. V. Reichart, Providence College), two comprehensive reports were presented on the future needs for physicians (W. H. Stewart, U. S. Dept. Health, Education and Welfare) and for dentists (Shailer Peterson, Council on Dental Education, American Dental Association). [Dr. Peterson's paper appears in this issue of the JOURNAL.]

The remainder of the morning was devoted to two panel discussions on future challenges in store for physicians and dentists. The panel dealing with career opportunities in dentistry was moderated by Dean Raymond Nagle, N.Y.U., College of Dentistry, with discussers from several Eastern dental schools: J. A. Cuttita (Columbia), M. M. Maxwell (Seton Hall), W. A. Wilson (Fairleigh Dickinson), J. N. Oaks (Harvard), L. W. Burket (Pennsylvania), and L. Herman, (Temple University).

Following a group luncheon, which was addressed by Vice Presi-

dent I. S. Ravdin, University of Pennsylvania, there was arranged opportunity for individual conferences with college admission officials and visits to local professional schools.

To succeed Dr. Joseph L. T. Appleton as Vice President and Chairman of Section Nd (for 1961), Dr. Harold J. Noyes, Dean, University of Oregon Dental School, was elected; and for new Committeeman-at-Large (1961-64), Dr. Albert A. Dahlberg, Zoller Memorial Dental Clinic and Department of Anthropology, University of Chicago, was elected to succeed Dr. Joseph C. Muhler who has completed his four year term of office.

The Secretary took official notice of the great loss to the organization by the untimely death of two very distinguished members of Section Nd, Drs. Balint Orban and Joseph P. Weinmann, both of the School of Dentistry, University of Illinois, and both active researchers in the area covered by the symposium on keratinization.

CALENDAR OF MEETINGS

CONVOCATIONS

October 15, 1961, Philadelphia

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco

November 7, 1965, Las Vegas

MINUTES OF THE MEETING OF THE BOARD OF REGENTS

February 5, 1961, Chicago

The Board of Regents of the American College of Dentists met in the Conrad Hilton Hotel, Chicago, on Sunday, February 5, 1961. Ten members were present; President Edgar W. Swanson presided. Minutes of the meetings of October 14, 15, 18, 1960, at Los Angeles, were approved as submitted by mail. The Treasurer reported a bank balance and bonds totalling $61,672.76.

It was voted to publish Historian John E. Gurley's treatise, *The Evolution of Professional Ethics in Dentistry,* and to use these as memorial books. The Secretary reported the death of nineteen Fellows since the Los Angeles meeting. The plan for the rental of caps and gowns was further discussed and approved.

It was reported that the plan for the distribution of dental periodicals in other countries, under the direction of Colonel Norman O. Harris and his committee was proceeding satisfactorily. The Board recessed to attend the Illinois Section luncheon and convened again at 2:00 o'clock.

Chairman H. A. Swanson presented a detailed report on the areas in dentistry considered in the recommendations of the Commission on the Survey of Dentistry. While the report is to be given further attention at the meeting of the Board in Philadelphia, the following recommendations were approved:

1. That the committees of the College review and re-evaluate their objectives, as outlined in 1956, and the recommendations made since then, in relation to the recommendations of the Survey of Dentistry.
2. That when a committee submits recommendations for activation of a problem, it outlines the procedure for such activation so that the next year's committee can proceed if it is approved by the Board.
3. That the Board give consideration to the many subjects covered by our committees, and that a study be made by a Committee of the Board of this problem in relation to the recommendations of the Survey.
4. That the Board highly commend the Commission on the Survey of Dentistry for its conscientious and devoted service to the profession of dentistry and that a resolution to that effect be prepared and sent to the American Council on Education, to the W. K. Kellogg Foundation, to the American Dental Association, to the Rockefeller Brothers Fund, to the Louis W. and Maud Hill

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These minutes, have been compiled and condensed by the Secretary, O. W. Brandhorst. The detailed minutes are on file in the Central Office.

Family Foundation, to the staff members of the Commission, and to each of the members of the Commission.

5. That this Board be prepared to cooperate to the best of its ability with any and all groups who are affected by the recommendations of the Survey.

6. That, if it is permissible and within protocol, the College recommend to the proper bodies that workshops be held within each of the areas, *Dental Public Health, Dental Practice, Dental Education,* and *Dental Research* for the express purpose of devising ways and means for the implementation of the recommendations of the Survey.

Dr. Blackerby, Chairman of the Committee on Dentistry's Social Characteristics, presented a preliminary report, indicating the many facets of the study. This report is to be discussed further at Philadelphia.

The secretary reported on correspondence regarding the ACD Lectureship and suggested a review of the objectives and accomplishments. This will be given attention at Philadelphia.

The Board approved the suggested changes in the bylaws of the Pittsburgh Section.

It was agreed that a panel type of program should be developed for the Philadelphia meeting, stressing the points made in the recommendations of the Commission on the Survey of Dentistry.

Adjournment at 6:45 p.m.

Correspondence and Comment

Criteria for membersip in the American College of Dentists. O. F. FREITAG, D.D.S., St. Louis, Missouri.—Probably most dentists aspire to become members of the American College of Dentists whether they are engaged in private practice, are members of a branch of the Armed Services, are teachers, or research workers. They have learned of the purposes of the College during their undergraduate days, probably know some of the members, and consider the College members the epitome of perfection. This is a noble ambition and encourages dentists with this aspiration to provide the best treatment, and to become professional men in the full meaning of the word.

Membership in the College must have been earned, as attested by two endorsees and study by the Board of Censors who employ every possible ethical

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A department under this heading was initiated in Volume 1 (1934) of the JOURNAL by William J. Gies, then the editor. It will be continued occasionally from now on as circumstances permit.

All members of the American College of Dentists are invited to submit discussions for publication. Owing to present limitations of space, contributions for this department should be brief and direct.

method to ascertain the qualifications of prospective members. To be a member imposes a responsibility not only to live up to the qualifications for which he was chosen, but an alertness to broaden his knowledge continuously in every field of human welfare as a worthwile contribution to dentistry and the College.

An analysis of members of our local Section makes me feel proud to know that I have the pleasure of being associated with a group of men, each recognized as outstanding, but for different qualities important to dentistry:

1. As being skillful operators in the oral cavity; 2. For having rendered valuable service to organized dentistry in an official capacity; 3. For attaining national prominence in a branch of government service; 4. For unusual proficiency as a contributor to the literature; 5. For having given clinics and presented papers; 6. As a teacher; and 7. As a research worker.

Few members, or prospective members, possess all of the qualities listed above, otherwise the membership in the College would be small. I realize that much thought is given and much time devoted to the selection of members, and that personal feelings, dislikes, personality clashes, or differences of opinion, are never factors in the rejection of a proposed member.

The Good Lord in His Infinite Wisdom has not created men with the same qualities, virtues, personalities and characteristics, and yet the possession of these qualities are basic in the selection of men for College membership. Neatness, honesty, high moral principles, and professional demeanor also are basic attributes. Which one of the seven qualities I have enumerated, if any, carries the most weight is difficult to determine; the Board of Censors has a hard task and a thankless job to perform.

I am acquainted with dentists of unusual operative skill, some of whom have been so completely dedicated and devoted to patient care that their spare time is even limited with members of their own family, and they have no opportunity to serve otherwise or to write for publication. These men, in direct service to the public, have the respect of their patients and are doing a great and important service to humanity, in addition to promoting good will and bringing prestige to dentistry.

When I enjoy the privilege of speaking to these men, usually at a dental meeting, my conscience inquires why are they not members of the College; certainly the ability to perform skillfully in the oral cavity is of paramount importance. To be capable of providing specialized surgical treatment in the mouth, to plan treatment according to the best interests of the patient, to restore teeth with the nearest approach to nature, and in instances of abnormalcy to approach the normal in restorations, calls for a knowledge and intelligence unmatched in any area of dentistry or in any other profession.

I cannot expect the College or even our local Section to be influenced by my feelings, but perhaps I can plant a seed for thoughtful consideration.

An approach to dental recruitment at the local level. JAMES P. VERNETTI, D.D.S., Coronado, Calif.—The need for recruitment of more young men into the dental profession is acute according to the recent "Survey of Dentistry" report. Where is this pool of young men? They are now in the high schools of America waiting for help and guidance.

The Boy Scouts of America, based on information developed in a nationwide survey by the Institute for Social Research of the University of Michigan, spent three years developing a program to satisfy the desires and needs of young men of this age. As a result, the new Exploring Program was developed. It co-

ordinates their school curricula, their social activities and their moral guidance in one package of activity. The Explorer Post is patterned after a junior service club. The elected officers follow the pattern of President, Vice President, etc., and the adult leaders are known as Advisors and Assistant Advisors. Each Post can set up monthly, specialty activity programs, usually on a three meeting basis. Dentistry should take advantage of this programming. Outlined herewith is a sample three meeting program.

First meeting—75 minutes

1. Show a film or have an interesting speaker on dentistry as a profession, telling of college requirements, economics, teaching and research possibilities, etc. (Obtain material from ADA.)
2. Any film to be used should be previewed. The one titled "Pattern of a Profession" leaves much to be desired for this type of showing.
3. Tell briefly about dental caries and diseases of the mouth. Illustrate with slides if possible.

Second meeting—90 minutes

1. This meeting should be conducted in a dental office.
2. In the reception room or a suitable large room, explain to the entire group with models, charts or slides, the surfaces of the teeth and types of filling materials. (20 minutes)
3. Assuming there are 15 boys to a Post (average), divide the boys into three groups of five. Take each group to an operating room. Have dentist for each room.
4. In Room No. 1 have extracted lower molars in good condition, one for each youngster. From model, demonstrate the appearance of an occlusal amalgam preparation, have each boy prepare same on his extracted tooth, using first conventional drill, next the high speed or air turbine. Then have the boys mix the amalgam, condense into cavity and when set, carve.
5. In Room No. 2 have two prepared teeth to receive a two-surface inlay. Allow boys to melt wax into cavities, carve and withdraw with sprue to see internal impression.

Have three boys examine each other's mouth with a mouth mirror; one to be the patient, one representing the dentist, and one charting the fillings on a record chart as they are called to him. (*Example:* One, two or three surface restorations, etc.) Then have each alternate.

6. In Room No. 3 (or laboratory) have dentist demonstrate the mixing of impression materials, then allow youngsters to take alginate impressions of their own fingers and pour with stone.
7. Rotate from one room to another at 20 minute intervals.
8. Have 10 minute question and answer period for entire group at end.

Third meeting—90 minutes

1. Explain to the entire group the planned program for the evening. On a blackboard seek the names of the teeth by group participation, and draw (roughly) the entire arch. Explain briefly the extraction of a tooth and the need for replacement of one tooth with a permanent bridge and the loss of many with partial or full dentures. (15 minutes)
2. Again divide into small groups in dental office.

3. In one room, explain the entire casting process of a gold inlay or crown step by step. Have the inlay at all stages so that the boys can follow the procedure. Also explain about bridges and porcelain crowns and show samples. (20 minutes)

4. In second room show the process of making a partial denture (showing wax-up on a model) and a full denture (have finished samples of each). Have for display, mold and shade guides and explain each. (20 minutes)

5. In the laboratory, have two full denture set-ups on articulators. Have teeth set up articulated on one-half arch only. Then have one Explorer set the matching 3 upper anteriors, another the lower anteriors, divide the posteriors among the other boys. Remove the newly set teeth and repeat process with each group. Also make 3 gold castings and as each group visits, make an actual casting for them. (20 minutes)

6. Have 10 minute question and answer period.

Suggestions

1. Prepare in advance each step of program *carefully*.

2. Do not allow inactivity. Keep evening confined to no more than 90 minutes.

3. Allow youngsters to do as many procedures as possible with their own hands, unless too time consuming.

4. Keep groups in each office small for more personal observation. Do not permit boys to wander or mingle with other groups.

5. When speaking is necessary, do or have done, in an enthusiastic and well prepared manner.

6. Have the *entire program* planned before any Explorer Post is contacted.

Reaction

1. The enthusiasm for dentistry thus developed will be heartwarming and worth the effort.

2. This favorable impression will interest many outstanding young men in dentistry as a career.

3. Others not interested in college may become laboratory technicians.

Source of contact

Boy Scouts of America Council or district office or officers.

1. Council Committee Exploring Chairman.

2. District Committee Exploring Chairman or District Chairman.

Book Reviews

THE EVOLUTION OF DENTAL EDUCATION. By John E. Gurley, D.D.S. 276 pp. American College of Dentists, 1960. The Ovid Bell Press, Inc., Fulton, Mo.

This book of eight informative chapters recites the progress of dental education from its roots to its accomplishments and status in 1959. Including a chronological history of The Dental Education Council of America and The Dental Faculties Association of American Universities it brings to date the aims, organizational framework, scope, and attainments of dental professional training.

The author presents the history of the three great steps that elevated the profession from its composition; i.e., the Dental College, Journal and Society. The development of curricula, standards, teachers, equipment and research is portrayed in extensively documented form.

Dr. Gurley comments ably on dentistry's responsibility technically, culturally, scientifically, and philosophically. Likenesses of many of the early contributors to dental education, and paragraphs indicating the nature and the results of their efforts, add much to reader interest. The objectives and the means employed in classifying and inspecting dental colleges are stated in the official "Report of the Secretary of The Dental Educational Council of America." Resolutions of that important body show both the broad and the specific policies which, through their adoption and implementation, created the sound structure that has brought dental education to its present state of efficiency.

The concluding paragraph of the book contains the significant observation that the future of dentistry and of dental education lies in the hands of the dental practitioners.

The thoroughness with which this work was prepared is attested by 755 bibliographic references. It is a valuable addition to dental literature in both text and composition.

Neal A. Harper, Columbus, Ohio

PRINCIPLES OF CLEFT PALATE PROSTHESIS. By Cloyd S. Harkins, D.D.S. With the collaboration of Wm. R. Harkins, D.D.S., and John F. Harkins, D.D.S. 219 pp. New York: Columbia Univ. Press, 1960. $12.00.

Since there exists various specialized fields within the profession of dentistry, this book would not be of *primary* interest to all; however, all allied segments of the profession could learn much from it by a study of related phases.

This reviewer has thoroughly covered the contents. The author has paid great attention to detail; the illustrations are large and clear; the materials recommended are of such a type that appliances can be fully fabricated within the office of the dentist in charge. Procedures are so well described that it is not mandatory for any dentist interested in doing cleft palate rehabilitation to be a specialist in prosthodontics. Further, there is a complete index and a bibliography of well over 150 references to augment the author's own material. The book is well bound and has an easy-to-read format.

Dr. Harkins has selected an excellent sequence for the presenting of his

subject matter, starting with diagnosis and study casts of simple problems and progressing to the more complex variations of abnormalities and their treatment. He includes a consideration of such related factors as the construction of gold crowns necessary for abutment retainers, and corrective surgical procedures to assist the well-functioning of the appliance.

Finally, a whole chapter is devoted to a program of speech therapy for cleft palate patients who are wearing a corrective prosthesis—A consideration as important in this work as the actual closure of the cleft.

Since this is the only book currently in print concerned with this particular field and since it contains so much more information, in relation to other aspects of dentistry, than its title would indicate, it should be one of the proud possessions of all dentists.

Victor L. Steffel, Columbus, Ohio

THEORY AND PRACTICE OF CROWN AND BRIDGE PROSTHODONTICS. By Stanley D. Tylman, A.B., D.D.S., M.S. and Stanley G. Tylman, D.S., D.D.S. 4th Edition, 1063 pp. St. Louis: C. V. Mosby Co. 1960. $17.50.

This is the 4th edition of Dr. Tylman's widely used book on crown and bridge prosthodontics. It has been considered a standard work since the early 1940's.

In the preface, Dr. Tylman states ". . . the purpose of the book is twofold—to serve as a text for the student and as a reference book for the practitioner."

The format and content of this edition are essentially the same as the 2nd and 3rd editions. There are new chapters on the evolution and technics of high-speed tooth cutting methods and equipment; the use of the mercaptan and silicone base impression materials; and a discussion and technic of recording hinge-axis registrations using the Hanau H2-XPR articulator. Also, there has been some revision in the chapter on hydrocolloid impression material (changes in conditioning temperature and retraction methods), and the addition of a more recent method of baking porcelain on precious metal.

The new chapter on the evolution and technic of high-speed cutting instruments is thorough and comprehensive; however, the author does create an inconsistency in later chapters on tooth preparations. In the new chapter he states that carborundum stones were used to reduce and penetrate tooth enamel before the advent of high-cutting speeds, yet in later chapters he lists carborundum stones as major cutting instruments for tooth preparations.

An excellent and informative discussion is presented on the use of the mercaptan and silicone base impression materials. This chapter also includes the technic and equipment used for silver and copper electroplating.

The third new chapter discusses the measuring and recording of the hinge-axis relationship in a thorough detailed step-by-step procedure. The technic presented is quite involved; the same results may be obtained by using a simpler technic with the same articulator.

The illustrations are profuse, and for the most part well selected. Some of the older illustrations could be replaced by more clear and representative ones.

There are several areas in this book that could be modernized. For example: (1) much of the material in the first 22 chapters, although informative, is taught in other areas, and several chapters contain similar material; (2) the construction of the cast gold crown is discussed on the same basis as the swaged-cast and the cast-occlusal surface crown—these last two types are utilized in few

instances today; (3) a complete chapter (35) is devoted to the Davis and Richmond dowel crowns, which are obsolete technics; (4) in the chapter on pontic construction, several types are discussed that are out-moded when compared with the pontics which are the most widely used today; and (5) in chapter 29, mention is made of riveted copper or steel bands for a direct wax pattern technic—this is used little today.

This reviewer is of the opinion that this book serves as a good reference for the general practitioner, but falls short of its other goal as a text for undergraduate students. However, it is an excellent reference in *selected* areas for the undergraduate student, especially in the discussions and illustrations of basic procedures of tooth preparation.

James D. Harrison, St. Louis

PARTIAL DENTURE CONSTRUCTION. By William L. McCracken, D.D.S., M.S. 528 pp. St. Louis: C. V. Mosby Co. 1960. $14.00.

In recent years there has appeared a number of textbooks on the subject of partial denture construction. Not content with authoring these books, more than one author has completely revised an edition, thus attesting to the interest in the subject. Perhaps this in some way compensates for the period of years during which there was no modern text available on the clasp partial denture. This book by Dr. McCracken is so well written, so well organized and so informative that there seems to be little that can be added or little that can be omitted. It is rather difficult to review a book hat provides so little to criticize. The book can be recommended without reservation.

The author states that partial denture service may be logically divided into three major phases: planning and mouth preparations, support for the free-end base, and occlusal relationships. Since in no other field of restorative dentistry does the care and maintenance of the appliance play so important a role, the author could have included as a fourth phase, "The servicing of the partial denture." The author devotes a chapter to each of these important phases.

A partial denture consists of major connectors, minor connectors, direct retainers, indirect retainers, occlusal rests, and denture bases. The author treats these components in logical sequence. Chapter I is on terminology, and inasmuch as the author considers the term "Roach clasp arm" as being "not descriptive," your reviewer could only wish that the author had dropped the terms "Akers clasp" and "Kennedy bar" for the same reason.

There seems to be a messianic yearning on the part of dental authors to formulate a classification of partially edentulous spaces. Dr. McCracken reminds us that Cummer conservatively estimated over 65,000 combinations. This heroic feat may have given Cummer a great deal of satisfaction, but it is only of academic interest. Not so long ago Swenson wrote, "It is impossible at present to converse about a type of partial denture in class terms." Your reviewer is of the opinion that neither Dr. Swenson nor Dr. McCracken has solved the problem.

Another problem that confronts the dentist is the so-called temporary partial denture, and Dr. McCracken has an excellent chapter on the subject. The book is well illustrated with photographs and drawings, and the bibliography is more than adequate.

The author draws liberally from his colleagues. The chapter on endodontia by a colleague is written in the same crusading style that Dr. McCracken uses

and it seems appropriate. The philosophy of partial denture service is stated in the preface and should be read by every dentist, every student, and every technician.

Eugene H. Taylor, St. Louis

GENERAL ANESTHESIA IN DENTAL PRACTICE. By Leonard M. Monheim, B.S., M.S., D.D.S. 461 pp. St. Louis: C. V. Mosby Co. 1960. $10.50.

Since the advent of present day dentistry, dental educators have wanted a modern textbook primarily concerned with general anesthesia for dentistry. This is such a book. It is written by a dentist for dentists. The need for a book of this type is indicated by the fact that there are more general anesthetics given for dental purposes than for any other surgical specialty requiring anesthesia.

At first glance, one might think that this book would appeal to only a limited number of people in the professions; this is not true. The scope of its application is enormous, and some part will reach every person who treats a patient. The first three chapters are excellent, concise discussions of the anatomy and physiology of respiration, circulation, and the nervous system. The physiology involved is equally important for the unanesthetized patient as it is for the patient undergoing general anesthesia. Therefore, every dentist using drugs which have systemic action (and all of them do) should be aware of the information presented. For this reason, this book has considerable merit for the general practitioner of dentistry simply as a reference book in basic physiology.

General Anesthesia in Dental Practice is essentially a group of lectures concerning subjects related to and directly concerned with general anesthesia. It is directed toward the dentist who is using or will use general anesthesia in his practice. There is probably no phase of medicine or dentistry where sound practical knowledge of the basic sciences is of more importance than it is for anesthesia. In many books, the reader is overwhelmed with detail on these basic subjects. Dr. Monheim presents just enough detail for understanding but does not dwell on unimportant and irrelevant matters.

Very little time and space is devoted to technical aspects of anesthesia. Dr. Monheim feels that actual techniques of administering anesthetic agents can be developed and improved only by practical clinical experience under proper supervision. He wishes his book to serve as a source of basic information for the student and practitioner interested in anesthesia. In presenting his ideas, the author covers such subjects as: The anatomy and physiology previously mentioned; physics, as applied to anesthesia; the pharmacology of the anesthetic agents and associated drugs; the phases, stages, and signs of anesthesia; methods of administration; the airway; complications and emergencies; pre-anesthetic evaluation; pre-operative preparation and post-operative care of patients; operating room hazards; pediatric anesthesia; medicolegal considerations; and armamentarium used.

Some revision of ideas presented in older books concerning general anesthesia are developed. As an example, Dr. Monheim suggests new terminology and modification of the classical phases and stages of anesthesia. The phases are designated induction, maintenance, and recovery. The stages of anesthesia are classified as first, preparation; second, chemanesia; and third, surgical (light, moderate, depressed). He discusses to some extent one of his favorite topics, chemanesia, which he defines as that state of amnesia produced in a patient by a chemical or drug.

The chapter of physical evaluation is outstanding. The author emphasizes that the general dentist or oral surgeon occupies a unique position among the surgical specialities in that he alone makes the decision to use general anesthesia for patients outside the confines of a hospital. This privilege carries with it the responsibility of properly evaluating the status of the patient prior to the procedure, and deciding if consultation or hospitalization is necessary. Dr. Monheim classifies patients according to the operative procedure as to the advisability of operating on them as out-patients or hospitalized patients. However, he implies that many factors must be taken into consideration to determine if a patient should be hospitalized. These consist of the facilities available for out-patient anesthesia together with the training and ability of the personnel involved in the anesthetic and surgical team. These things, together with the physical status of the patient, are equally if not actually more important than the operative procedure in determining the ideal location for the proposed surgery.

This is one of the few textbooks concerning general anesthesia for dentistry which can be recommended for teaching purposes. It is a must for all trainees and practitioners of general anesthesia, and a valuable reference for the dental profession as a whole. This book is unquestionably a great contribution to dental literature by one of the outstanding men in the dental profession.

Bernard S. Snyder, Columbus, Ohio

ORTHODONTICS IN MID-CENTURY. Edited by Robert E. Moyers, D.D.S., Ph.D. and Philip Jay, M.S., Sc.D. (Hon.). 344 pp. St. Louis: C. V. Mosby Co. 1959. $8.75.

This publication is a record of the transactions of a workshop held in June, 1958, at Ann Arbor, sponsored by the University of Michigan W. K. Kellogg Foundation Institute of Graduate and Postgraduate Dentistry, with the cooperation of the Education Committee of the American Association of Orthodontists. The purposes of the workshop were to review the progress of orthodontics, to evaluate its current problems, and to plan for the future. In order to achieve this end, seven study groups discussed and gave opinions revolving about as many areas that were representative and significant to orthodontics as related to the broad field of health service.

These discussion groups were oriented about the subjects of: 1. Educating the Undergraduate in Orthodontics; 2. Educating the Specialist in Orthodontics; 3. The General Practitioner and Orthodontics; 4. Research; 5. Meeting the Demand for Orthodontic Services; 6. Relationship of Orthodontics to Other Health Services; and 7. Practice Administration.

To state briefly the findings of these discussion groups will of necessity omit much that was treated at length. Before proceeding with this attempt it may be well to point out that the answers to the questions raised represent the opinion of about 25 men in each section. As might be expected, not all reports represent unanimity of thought, and some compromise was inevitable on controversial issues. Such an issue was the indefinite line between interceptive and corrective procedures; another was concerned with the preceptorship method of training for limited practice in orthodontics.

Group 5 based a large part of their report on the results of surveys. Repre- activities being carried on in the different schools and centers. Training for research, publication of findings, criteria for determining the quality of orthodontic research, and clinical applications were among the many items under

debate. Specific ideas on the communication of research information included a microfilm library of research reports, publication of titles of work in progress, a cross-index of completed projects and the formation of an international research society. Group 4 felt that the week devoted to the workship was insufficient time and so plans were made to meet at a later date for continued discussions.

Group five based a large part of their report on the results of surveys. Representative of these are the correlation of family income and dental service, the availability of orthodontic training, the ratio of orthodontists to the under 18 age group, and the geographic distribution of orthodontists. The range of questions considered by this group ran from why an individual seeks orthodontic help to problems inherent in orthodontics as a public health service.

Group 6 discussed means of improving service to the public through more intelligent cooperation with related dental and medical services. Specific attention was directed toward the problems encountered in cooperation with the pedodontist, periodontist, oral surgeon, and pediatrician as well as the hospital staff and cleft palate team responsibilities of the orthodontist.

Group 7 considered questions arising when the economics, the ethics, and the public relations of orthodontic service are blended into one discussion. Such fundamentals as office location, fees, records, transfer cases, partnerships, and ethics are included and special mention is made of Mann and Easlicks' *Practice Administration for the Dentist.*

In order to maintain perspective, it should be noted that complete agreement concerning the questions discussed was the general rule. By way of example: the section dealing with research unanimously agreed that the area most in need of further study as an aid to clinical procedures was that of predictability of growth. Another such point of universal acceptance was the need for enlarging and improving orthodontic care as outlined by study Group 5.

Much of the material presented was the result of surveys which sought to gather facts about such pertinent subjects as the incidence and type of malocclusion in a community, or the comparative assessment of graduate training programs.

Study groups 1 and 2 made recommendations relative to objectives and methods of training, physical plant and staff specifications, student selection, etc. For the individual interested in any form of orthodontic instruction, be it undergraduate, graduate, postgraduate, or preceptorship, there is presented a rather complete outline of training programs at these various levels of teaching.

Study Group 3 considered means whereby the family dentist might be of more service to his patients in the area of orthodontic problems. This type of service logically begins with the need for recognition of present or impending malocclusion and continues to the presentation of a rather detailed outline to serve as a guide to the family dentist in deciding which type of problem to take care of personally and which to refer to the orthodontist. It is a modification of a similar outline previously published in the *Journal of Dentistry for Children.*

This volume contains both factual material and group opinions covering many questions relative to orthodontic service. Approximately 250 specific and pertinent questions were considered, and replies formulated. Much of the material included in this report is published for the first time and so it becomes a rather unique contribution to the orthodontic literature.

Robert E. Wade, Columbus, Ohio

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Dentistry and Its Future

GERALD H. LEATHERMAN, D.M.D., F.D.S.R.C.S.

Numerous articles and lectures are being published in our dental journals on dentistry and its future, and in the national press and magazines of various countries on dentistry as a health service. It is becoming increasingly obvious that dentistry has come to a crossroads in the paths of its progress as a health profession and, with this in mind, I posed six questions in my report as Secretary General of the Federation Dentaire Internationale to the General Assembly of the Federation at its annual meeting in Dublin, June, 1960. The delegates present felt that the questions were worthy of discussion at special sessions of the General Assembly in Helsinki next year and Cologne the year after.

I have asked about 70 colleagues in various countries for their personal replies to the six questions, and after studying their answers I am more than ever convinced that the dental profession in every country must consider whether its system of education and its organization as a profession is adapted to the present and future demands likely to be made upon it as a health service.

As so much has already been written about this, few original thoughts can be put forward. I shall therefore give you my personal views which are based on a fairly broad knowledge of international dental organization and practice, and indicate the line of thought and action which I believe those responsible for dental health the world over should follow.

To predict the future of a profession it is well to consider its evolution. Dr. M. M. Chaves,[1] Regional Adviser in Dental Public Health to the World Health Organization, has identified five evolutionary stages, each with its own particular type of practice. They are briefly as follows. In the first stage of *undifferentiated occupation* any treatment is given by lay persons as a secondary occupation; folk medicines and extractions are the only remedies for dental diseases, and

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Presented at the Autumn Meeting of the Anglo-Continental Dental Society in London, October 29, 1960.

Dr. Leatherman is Secretary General of the Federation Dentaire Internationale.

emergency dental treatment becomes available with the advent of missionary and public health services. As individuals devote themselves entirely to the practice of dentistry they acquire skill under the apprenticeship system (indigenous practitioners) and the second stage of *occupational differentiation* is reached. The third stage of *initial professionalization* begins with the organization of training courses of one or two years by the dental practitioners who group themselves in guilds. The guilds seek to impose their requirements on anyone wishing to practice dentistry thus creating conflict between their members and the unqualified practitioners. The fourth or *intermediate stage of professionalization* brings the establishment of independent dental schools, with dental courses of from three to six years. Professional associations become stronger and gradually the unqualified practitioners disappear. The auxiliary professions, working extraorally, with courses and legislation aimed at preventing the dental technicians from intruding into dental practice, come into being. The emphasis of dental education is on the technical aspects of the profession. With the vast increase in knowledge of dental science and art, specialization begins to appear in the larger urban areas. The fifth and last stage is the *advanced stage of professionalization and of professional diversification.* Dental education has become more balanced with greater emphasis on the biological sciences. Postgraduate education is developed and the number of dental specialties increases. Certain types of simple dental operations in the mouth are delegated to auxiliaries (hygienists and New Zealand dental nurses) under the supervision of the dentist. Membership in the profession is much more efficiently controlled so that practice by unqualified persons disappears, or almost disappears. It is at this stage of evolution that we like to think that dentistry has gained firm status as a health profession.

With each stage of evolution a new type of dental practice is developed as follows:

Type 1—Practice by a lay person as a secondary occupation.

Type 2—Practice by a lay person (without formal training) as a principal occupation.

Type 3—Practice by a qualified practitioner with about two years of formal training, working mostly unaided.

Type 4—Practice by a qualified practitioner with three years or more of

formal training at the university level, usually aided by dental technicians and assistants.

Type 5—Practice by a qualified practitioner as described in Type 4, but in addition with specialists available for certain types of dental work (orthodontics, periodontics, oral surgery, pedodontics, endodontics) and with auxiliary personnel doing certain types of simple dental operations.

It must, however, be remembered that the co-existence of different types of practice is a necessary consequence of the slow and gradual character of professional evolution. You can find this phenomenon in the same country or even in the same city where Type 5 practice exists in the better part of the commercial center and high income residential districts, Type 4 throughout the city and Type 3 in the low income suburbs and commercial streets of low-price type of business.

This briefly is how organized dentistry was born. What of its future development? The dental profession has the responsibility of providing a world health service but it cannot do this unless the national dental associations, which represent organized dentistry, play their part. The strength of these national organizations which in turn provide the strength of the dental profession, is dependent upon the unity and loyalty of every member. Not only the rank and file of practicing dentists, but also the teachers and scientists of the academic dental world must actively support their national association and speak with one voice if the profession is to progress. An outstanding example of a strong national association is the American Dental Association which is able to act as the sole negotiating body with the Government, universities, health organizations, commerce, etc.

The time has come for the national dental associations throughout the world—not only the administrators but also each individual member—to take stock of the situation and consider whether the conditions prevailing in their particular country are best suited to furthering the development of the profession and providing a health service for *all* the peoples of the world and not just the favored few. I hope that frank answers to the six questions I have formulated will show us where our failings lie and enable us to orientate our thoughts towards the attainment of this objective. My own answers to the questions are as follows:

Question 1. Does Dentistry as a Profession Attract the Best Quality Men and Women to Its Ranks—to Become Teachers and Practitioners?

In answering this question we must think of the population per dentist ratio, for it is quite obvious that in a country where there is one dentist for every million or more inhabitants, the standards of selection of those entering the dental profession should differ from those in a country where the ratio is 1 to less than 3,000. I think that when considering the essential facts in relation to population and educational standards, the obvious answer must be that we are not attracting the best quality men and women to our ranks. My reasons for feeling this are numerous and touch upon many facets of present day conditions.

In its evolution, dentistry has progressed from the stage of being an empirical art learned by apprenticeship to that of a highly technical and mechanical craft, and from there it should have evolved at the present day into a special field of medicine practiced by university educated and trained graduates, who treat diseases of the mouth in relation to the body as a whole. This evolution of dentistry into a scientific health profession should have taken place concurrently with an increasing appreciation of health by the general public, and, if the dental profession is to maintain its place and status, it must attract a large number of high quality men and women as students to its schools.

Let us consider first the general position. Despite the increase in the number of young people proceeding to universities and other higher educational institutions, there are still not enough capable persons to fill the positions requiring special training in any field. The result is fierce competition to attract the best of them into business, commerce, and industry as well as into the professions. The professions themselves have raised their educational standards, and dentistry has to compete with medicine and the other allied professions for the few students who have had a basic training in the biological sciences. With a wide variety of posts open to them on graduation, students will naturally aim for those offering a high salary, with fringe and pension benefits, work in a good climate, time and pay for postgraduate studies. To what extent is dentistry able to attract recruits in these circumstances? The problem of attracting high

quality men and women as dental students is inseparable from that of establishing well informed and balanced teaching faculties in the dental schools throughout the world. By "well informed" and "balanced" I do not mean only *dental* disciplines. Our faculties are in great need of teachers in other disciplines as well. We dentists, men and women, can play our part in attracting the right people to our ranks. By virtue of example and service in the society in which we live we must create that feeling of respect which makes others want to follow our profession.

Furthermore, it is not only a question of educating the *best quality people* for the profession, if dentistry is to maintain its position in the society in which it works, but also of educating *society* regarding the importance and value of dentistry as an attractive profession and correcting the widely prevalent misconceptions about dental practice. Organized dentistry must recognize the present day needs and demands of community life, and by good public relations and sound administration make the public realize that we are aware of our responsibilities and are able to handle them like a great profession. This also means that dentists in those countries where there is a state health service must be fair-minded about public services paid for by taxation, and not underrate them in relation to services bought by private income. We can then hope that a part of what is every nation's greatest asset—its youth—will be encouraged to take up dentistry as a career.

Question 2. Is the Present System of Dental Education Best Suited to Produce Persons Who Will Practice Dentistry as a Health Service Rather Than as a Dental Art?

This question might be thought to imply that there is only one system of dental education throughout the world. This is of course incorrect, for if we refer to our chart showing stages in the evolution of the dental profession, we see that this necessarily involves many levels of dental education. The growth of dental education is generally concomitant with the economic development of a country. For example, the dental course has been lengthened in many countries from two to six years over the past sixty years. However we are now in a phase of world development, where the standards of living and health in the advanced countries become the goals which the less developed countries want to reach as soon as possible. National pres-

tige demands that educational standards compare with the best in the world and, in the less developed countries, this has usually meant the setting up of dental schools based on the present pattern of those in Europe and in the United States, thus transplanting the system of dental education from countries in the intermediate and advanced stages of professionalization to a country in the stage of occupational differentiation, thereby by-passing the initial stage of professionalization. The advantages of being realistic, and planning for dental educational standards to rise with the level of general education and social and economic development of a country, do not seem to be considered in some countries. Yet it is the natural pattern of evolution of dental education and practice. An example of this is India with a population of 408,000,000 people, with approximately 5,000 registered dental practitioners of whom less than 1,000 are fully qualified, and which now has 11 dental schools. These schools graduate about 100 dentists per year and have a curriculum of six years—two years pre-dental and four years dental. Theoretically the standards are the same as set in the U. S. A. where the ratio of dentists is approximately 1:1,800. This concept of professional education in the less developed countries ignores the necessity to provide health service personnel to meet the needs of a population and is quite unrealistic.

Now what is meant by practicing dentistry as a health service rather than a dental art?

Let it be clear that by health service I do not mean a public dental service such as is practiced in Great Britain, but the provision of dental health for the masses, whether privately or in state-run schemes, wherever there is need.

Once again we have to recall the evolution of dentistry and we know that as far back as the Egyptian dynasties and in Ancient Greece a dental art was practiced as a specialty of medicine. We read of primitive dental techniques in Europe during the 14th, 15th and 16th centuries but it was not until the 18th century that one noted an advance in the status of the dentist. For example, Pierre Fauchard, 1678-1761, wrote a textbook on dentistry describing various techniques, and John Hunter helped to lay the foundation of dental education by arranging in 1782 a special course of lectures on dentistry.

In an attempt to correct the ravages of dental disease the few

surgeons who specialized in dentistry developed the art of maintaining and replacing teeth by such methods as implantation, joining teeth together, and the making of dentures. As time passed, and with the help of the jeweller, the porcelain worker, the metallurgist and the engineer, new techniques developed, and during the latter half of the 19th century dentistry evolved from an empirical art taught by apprenticeship into a highly mechanical craft practiced by dentists with a high degree of manual dexterity but with little or no scientific background. In the early 1900's the X-ray was developed (1896-Roentgen), and then came William Hunter's[2] famous statement:

> No one has probably more reason that I have had to admire the sheer ingenuity and mechanical skill employed by the dental surgeon. And no one has had more reason to appreciate the ghastly tragedies of oral sepsis which his misplaced ingenuity so often carries in its train. Gold caps, gold fillings, gold bridges, gold crowns, fixed dentures, built in, on, and around diseased teeth, form a veritable mausoleum of gold over a mass of sepsis to which there is no parallel in the whole realm of medicine and surgery.

This statement, supported by the papers of William Willcox and Frank Colyer[3] on septic dentistry in 1910, brought the realization that to practice dentistry as an art was not sufficient, and that the course of dental training must include a study of the basic medical sciences, anatomy, physiology, pathology and the principles of medicine and surgery, thus introducing the science of dentistry as well as the art, into dental teaching and practice.

The next 20 to 30 years saw the development of the biological education of dentists but with a good deal of the course still devoted to the arts and crafts of dental practice. And while there have been more changes in the curriculum one may fairly say, I think, that this is the situation today. The dental graduate of today, while he has a much better biological education on a broader scientific basis, still enters the profession with the background of dentistry as an art, and his practice is chiefly dependent upon the execution of techniques.

Dr. J. B. Macdonald[4] of Boston, however, states as his first and basic premise that progress in meeting the increasing future gap between supply and demand for dental treatment cannot be met with an approach based on techniques alone. Improvement in dental health can come only from "a program of dental education in which the central theme is prevention." "All significant improvement," he

continues, "in the dental services of the future will come from developments in the basic sciences" and "the training in the biological sciences must be equal in scope and quality to the training provided for medical students."

Byron S. Hollinshead,[5] Director of the Committee on the recent Survey of Dentistry in the U. S. A., writes:

> I come to the suggestion that dentists should establish a new section of dental health practice which would be allowed to develop as a four year course, meeting three hours per week each semester. What would such a course cover? This would depend upon the school and the teacher in charge, but certainly the following topics should be included: history and orientation; dental health and society; psychological and economic factors in practice; hospital relations, including education and research and professional ethics. These subjects are so important that to devote three hours of class time per week to them seems little enough.

Dr. Philip Blackerby,[6] Director of the Division of Dentistry, W. K. Kellogg Foundation, sums this up very well by stating that the subjects of social import in the dental curriculum are now taught inadequately by the dental schools and should be regrouped and integrated under a Department of Social Dentistry, with co-ordinating as well as teaching and research objectives and functions, and directed by a competent dentist with education and experience in public health administration.

It is this concept of dental health practice, based on sound principles of prevention and supported by new courses in social dentistry, which lies behind the question of whether the present system of dental education is best suited to produce persons who will practice dentistry as a health service. Society is beginning to think in terms of total health and demands will be made upon the dental profession to contribute towards this end. The dentist of the future will have to develop improved methods to maintain oral health, new concepts of oral hygiene, nutrition and child care in clinics. He will have to train and learn how to use an abundance of auxiliary help to assist him in coping with the social dental health problems of the future.

There can be no doubt that over the years and, indeed, up to the present, dental schools have been more concerned with the development of technical skills—more useful in private practice—at the expense of the biological and social sciences, which are the foundation of a real health service. I do not believe that the dental schools are

preparing their graduates to meet the health service demands either now or in the future.

Research must in the years ahead reduce dental disease, especially dental caries, and the maintenance of a healthy dentition in a healthy mouth will depend upon a new type of practice where the prevention of periodontal disease, the correction of malocclusion, the consideration and treatment of the problem of the child and the aged will be brought into focus.

Question 3. Has the Present Conception of Dental Practice Kept Pace With Scientific, Medical, and Social Progress?

A large part of what has been said in discussing the previous question forms the background for the answer to this question. Indeed, it is difficult in some ways to separate them. However, let us deal with this in two parts. Firstly, has dental practice kept pace with scientific and medical progress? Studying the replies I have received from all over the world I find the general view is that dental practice is keeping abreast of medical progress. I think one can summarize by saying that the concept of dental practice has kept pace with current scientific medical progress, but this is not applied currently in routine dental practice. This raises of course the question of dental schools and their present curricula and teaching methods, and it is suggested that more vertical integration is needed between the basic and clinical sciences, and that there is a shortage of clinical professors well grounded in the basic sciences.

As regards dental practice, we must consider the problem of the age groups. A large proportion of the world's dentists are in the upper age bracket and this means a marked difference in the education they received in comparison with the young graduate of today. Unfortunately after graduation dentists show little interest in research or postgraduate education, or even in reading current dental literature and, while they may realize that a study and practice of prevention and control may reduce dental disease, they obviously feel that under present conditions they cannot economically afford to be anything less than technically competent.

It is suggested with some truth that this lagging behind in preventive practice by the dentist is not his fault. For most of his professional life he carries out elementary mechanical repetitive treat-

ment for which he is paid a comparatively high remuneration—whereas in the time he has spent training as a dentist at a university he could be educated as a scientist and taught how to control a number of auxiliaries who would carry out the repetitive work.

The other part of the question deals with social progress, and there is a good deal of agreement in the replies that in most countries dental practice has not kept pace with social progress. There is no doubt that in some countries the dental profession is facing problems to which solutions have not been taught in the dental schools and, as a consequence, there is no proper leadership, and empirical trial and error methods are used, often leading to serious mistakes. Organized dentistry through its leaders should be guiding the profession through the various acute problems which exist at present, but for the most part one gets the impression that the national organizations have not kept pace with social progress in their planning.

To the average dentist in practice, concerned mostly with personal problems, I am afraid public health dentistry, dental welfare, and service to the community are political slogans.

In relation to social progress I think it behooves those responsible for the education and organization of the dental profession to realize that dentistry in most parts of the world has a franchise from the people, granting it the right and privilege of dental practice which means setting standards of education and practice, disciplining its members and particularly offenders under the law. This monopoly will only be accepted by the people so long as it can be shown that it is for the *good* of the majority.

There is a tendency among members of the dental profession today to look upon their privileges as the right to protect a vested interest, and there is the danger that the profession is becoming suspect in the eyes of the public and could lose some of the preferential position it now holds.

The dental profession is being asked whether it is fulfilling its prime responsibility of taking care of the dental health of the population; whether it is meeting in full the demands for its services and whether it is providing these at reasonable cost where payments have to be made. This applies forcibly in a country like Great Britain where the cost of a General Dental Service is approaching 50,000,000 pounds per annum, and the public is beginning to question

what they get for it in relation to the remuneration of the dentist and the availability of treatment.

Over the years standards of practice, conduct, and education have risen to a marked degree with the generally improved standards in a country. In the so-called advanced countries the system of dental education, while it has admittedly increased in length and presents a more balanced syllabus in relation to the basic sciences and the technical subjects, has not really changed its concept of producing a graduate equipped to conduct the highest type of private practice, seeing few patients at high fees. This concept applied, as it is, to the dental profession throughout the world, could hardly be more disastrous in its effect upon the public who see its end results as a shortage of available dental services at reasonable expense. Dentistry must adapt itself to a changing world just as other professions have done, or are doing, or must perish.

All progress is dependent upon research and in this respect dentistry is only now beginning to organize itself. We need the right personnel, proper facilities, adequate funds, and much more international co-ordination, and in many fields we have scarcely scratched the surface. At best in any system the application of new findings to teaching and practice must lag behind the research which produced them—the rate of current change is so rapid. It behooves organized dentistry, however, to alert the profession to the need for wholehearted support of research projects, both in the laboratory, clinically, and socially; then, and only then, will we begin to keep pace with progress.

Question 4. This Deals With Health Programs and Asks Whether the Dental Profession Is Prepared or Preparing to Take Its Place in the Health Program of Those Countries Which Are Planning a Total Health Care of Their Populations

This immediately raises the question as to which countries have a program of total health care of their population, and which are planning to have one. By and large, all the communist countries have a National Health Service with dental care as part of that service, and the only country in the Western World with a fully comprehensive National Health Service is Great Britain.

There is no doubt in my mind that the peoples of the world will, in the future, demand of their governments a National Health Service, and the purpose of this question frankly was to stir organized dentistry into asking itself—how far are we prepared to take our place as a health profession in such a service when it comes to our country? This is not the place to discuss the merits of or objections to a Health Service, especially as it applies to dentistry. The point is that we have many examples to study, both in the communist and democratic countries, where there are total or partial Health Services, and there can be no excuse for the dental profession in any country not being prepared for the problems of a complete social health service. The example of how the majority of the members of the British dental profession failed to follow the policy of their leaders when the National Health Service was introduced into Great Britain should be a reminder to any national organization which refuses to look at this as a problem of the immediate future.

The world in which we live is, by and large, governed by two kinds of political thought, Communism and Social Democracy. The interesting thing, so far as dentistry is concerned, is that in the communist countries the dental profession has taken its place in the total health care of the population. Standards may be much lower than in some of the democracies, but undoubtedly organized dentistry, admittedly government-controlled or supervised, is an integral and effective part of the national health service. Their system of education is slowly turning out large numbers of better trained stomatologists, i.e., dental practitioners with a medical background, and in the meantime lesser qualified men and women are fulfilling the day to day dental demands and very great use is made of auxiliary help. The accent is on prevention. Once one can appreciate that a dental health service can be given with the clinical dentistry not of the highest standard, but with health education and preventive measures occupying a prominent place, then there must be a lot to be learned by a careful study of the methods used in the communist countries.

In the democratic world we are in a real state of flux. In a highly developed country like Great Britain we have a comprehensive health service and, frankly, organized dentistry still has no practical plans accepted both politically and economically to take its proper

place in this service. The leaders of the British Dental Association spend most of their time fighting for better terms and conditions of practice for their members working in the Health Service like the leaders of a trade union. The profession itself fights for its so-called clinical freedom, and yet, a very large percentage seem well content to work in the service. And what of the dental service, what kind of example has it set to the rest of the democratic world? In fairness one must say that more of the British population have received dental treatment than ever before, and that by and large the dental health of the adult population is probably better. But we still have the appalling lack of treatment for the children, little or no health education, no large scale prevention, very little research and an expenditure of fifty or more million pounds per annum, mostly on a breakdown or repair service. The public will not allow any government to tolerate these conditions indefinitely and if dentistry does not take the necessary steps, then inevitably experts in other fields will be called in for advice and action.

What of other countries? The Executive Boards of the national dental associations of Canada and the United States met for the first time in joint session in May 1960 to discuss long-range plans for meeting the rising demands for dental health care in both countries. In a news release they agreed upon the following points:

> The profession should provide leadership in the field of dental health but all community agencies must help to provide more adequate and better distributed health services.
>
> The adoption of such proven measures as the fluoridation of public water supplies, plus greater emphasis on dental health education, would permit the development and application of resources to meet public needs adequately.
>
> Governmental and other agencies should provide funds earmarked for expanded programs for the training of all types of dental personnel—particularly dentists—and for broader dental research programs.
>
> In the planning of any dental care program, priorities must be established to provide maximum health education and treatment for younger age groups, and greater attention must be given to the integration of high standard dental care into total health programs.

There are signs of a world-wide awakening of the dental profession and the dental health programs of Great Britain, the Scandinavian countries, New Zealand, Russia, Czechoslovakia, Hungary, Brazil, the Netherlands, Switzerland, and Germany need to be studied and

personal biases and learned prejudices be put on one side, so that the dental profession in each country is in a position to accept the responsibility for organizing and supplying the total dental health care of its people.

Question 5. Is the Dental Profession Ready With Plans to Advise the Peoples of the World How to Avail Themselves of Presently Accepted and New Measures for the Maintenance of Oral Health?

In a Summary Report of the Commission on the Survey of Dentistry in the United States, 1960, conducted on behalf of the American Dental Association by the American Council on Education, the Commission makes very practical suggestions as to how the dental profession in the United States should take care of the dental health of its people in the future. I shall quote freely from this report which merits careful study by dental administrators and educators all over the world.

This question could be considered a question of dental health education, not only of the public, but of all those concerned with the health professions, including physicians and dentists.

I do not think it can be denied that the world's population is appallingly ignorant of the importance of dental care and the hazards of dental neglect and, basically, it is the practicing dentist who must bear the blame for this, for the public's contact with dentistry is primarily through the dentist. In a country like Great Britain, with approximately 10,000 practicing dentists, it can be fairly assumed that each dentist sees 20 patients per day—this means a total of 200,000 people are seen per day, and therefore one million in a five-day week. What an enormous influence, both politically, educationally, and socially, the dental profession could exert on the population. The same applies, of course, to many countries.

Dental health education must come primarily from the dentist, but his dental organizations must have an effective program to reach the allied health services, health education authorities and schools, and such programs must have the full political and economic support of the state.

You will be interested to learn that the FDI sponsors in Zurich, Switzerland, an International Office for Dental Health Information

which collects dental health education material from all over the world, catalogues it, distributes information about it, and will plan dental health education campaigns. This office is under the direction of Dr. Hans Freihofer who has written:

> Our experience shows that whilst dentists and health authorities in most countries are making energetic efforts towards progress in the field of Dental Health Education, what exists today can, however, with the exception of a few countries including the United States, be only described as totally inadequate.

Although Dr. Freihofer excludes the U. S. A., the Commission on the Survey of Dentistry (U. S. A.) gives the following information:

In the United States it is estimated that there are in the neighborhood of 700 million untreated cavities, an average of nearly four per head of the population. By the age of fifty, nearly 50 per cent of the population have developed periodontal disease and by the age of sixty-five nearly 100 per cent. A little over 40 per cent of the population visit a dentist every year, an additional 30 per cent receive some care, and the rest, about one-third of the nation, no care at all, except a possible extraction to relieve pain.

Now what are the presently accepted dental health measures of which the people of the world can avail themselves? This must be considered from two angles; firstly what the people can do for themselves and, secondly, what can be done in co-operation with the dentist and his auxiliary help, for there are basically only two ways to cope with the dental health problem: 1. Prevent dental disease; and/or 2. Treat it.

The dental profession, in conjunction with public health agencies, civic authorities, parent and teacher groups, and commerce, must in every possible way stimulate public appreciation of the importance of dental care, not only for its own sake, but because of its relationship to total health care. What should such a program stress?

> 1. (a) In all countries where there is piped drinking water the public health measure of the fluoridation of drinking water offers striking benefits, reducing the tooth decay rate by 50-60 per cent. (b) Where there is no public water supply, other methods of using fluoride can be adopted, although they are not yet supported by conclusive evidence: (1) Topical applications of fluoride solutions; (2) Adding fluoride tablets to food or drinking water or (3) Using fluoridated tooth paste currently given qualified approval by the American Dental Association.

2. Instruction on good oral and dental habits in children's schools by properly trained teachers on a systematic continuous basis. This would include current use of the tooth brush, what kinds of food to eat and some general knowledge of how teeth grow and should be used, and what makes them decay and loosen. They should also be taught what the dentist can do for them.

3. A large scale public dental health education program on a continuing basis over the television and radio and in the press.

This large scale educational program should make it clear that for a long time to come prevention, in the battle against dental disease, must be reinforced by treatment. The public must be made aware that treatment carried out early enough is preventive in itself—a small filling can save a tooth, and periodic scaling and cleaning will most likely prevent periodontal disease.

Many countries have argued that a campaign of dental health education will produce such a demand for treatment that lack of dental manpower will defeat the purpose of the campaign. This has yet to be proved, but should only strengthen the case for widespread use of fluorides, more good oral hygiene practiced in the home, more attention to eating the correct foods and giving the children priority of dental treatment as a preventive measure, plus a public demand for the State to supply more dentists and properly trained auxiliaries to help them.

Now let us turn to what the dentist should be doing for his community, for he is the key man in any effort to give the public dental health. Dentists all over the world must participate vigorously in community public health projects.

In his practice the dentist can carry out five preventive procedures in an attempt to forestall dental disease.

1. Routine scaling and polishing. This, in my opinion, when coupled with effective home care, is a great practical preventive of periodontal disease but of course not the complete answer.

2. Topical application of fluorides and prescribing the use of fluoride tablets for expectant mothers and babies where drinking water is not fluoridated.

3. Routine use of X-ray for examination starting from an early age. It should be noted here that with the proper precautions, exposure can be reduced to a safe amount, both for the patient and operator.

4. The effective use of a recall system for all patients for examination and cleaning.

5. The study of habits and early correction of donto-facial deformities.

It is interesting to speculate how few dentists in the world conduct their practice along the above lines and yet, this is what the profession should be teaching the public to expect from their dentist. It is also interesting to reflect how much of this preventive practice could be carried out by auxiliaries.

Now the question also speaks of new measures for the maintenance of oral health, and this brings me to the question of research, for the most hopeful avenue leading towards the prevention of dental disease is research. Yet nowhere are the potentialities of dental research being fully exploited. It has taken 20 years for the use of fluorides to become a practical preventive measure. How much longer will it be before the dental profession is able to identify the organisms responsible for decay, prevent the formation of calculus, or solve nutritional problems connected with teeth formation and breakdown?

Apart from investigations in the natural sciences, there is a great need for research in the social services in connection with dental health problems. For example, what are the economic and sociological reasons why people do not seek or obtain dental care when it is available? There must also be close collaboration between science and commerce, for industrial research is continuously producing new materials, and these must be evaluated and standardized on an international basis.

Thus new measures for the maintenance of oral health are dependent upon:

1. Our universities which must develop close relations between all their departments to promote an exchange of knowledge and ideas.
2. Our dental schools which must stimulate more interest in research by both faculty and students and must create more time for research.
3. Our social services, to promote the knowledge of how people live and think in relation to their health. Here a study of Health Services in the communist countries would be useful.
4. Commerce and industry for the knowledge concerning the production of new materials and for providing funds for research.
5. The State to provide sufficient funds to produce scientific research workers and support their programs.
6. Adequate means of making the knowledge produced by research known, understood, and applied all over the world. This means good publications and strong support of such organizations as the F.D.I., the I.A.D.R., ORCA, and ARPA, by all national organizations and State Public Health Services.

Question 6. Whether the Dental Profession Is Preparing to Educate Auxiliaries Concurrently With Its Own Educational System, so as to Ensure That the Standards of Dental Practice Are Not Altered, and That Such Auxiliary Services Are Recognized, Organized, and Controlled to the Benefit of Both the Public and the Dental Profession

In the study of auxiliary services I suggest we define the word auxiliary as covering all forms of subsidiary dental personnel who are of assistance to the dentist and who work under his direction and supervision (WHO Expert Committee Report on Auxiliary Dental Personnel—1958).

Let me now return to our original description and chart of the evolution of the dental profession. The first three stages saw the development from crude treatment by a lay person, through the indigenous practitioner, still a lay person, to initial professionalization and organization as a profession—the dentist still working mostly unaided. The fourth stage, of practice by a qualified practitioner with formal training, produced with it the recognition and organization of two types of auxiliary personnel: the chairside assistant and the laboratory technician. At this stage courses and legislation were established, mostly for the dental technicians, to prevent their encroachment into dental practice. The chairside assistant was, for the most part, trained by the dentist. Then came the fifth stage of evolution, the advanced stage of professionalization, and with its development we find two further types of auxiliaries, namely the New Zealand dental nurse, trained to carry out curative procedures —fillings and extractions on children—under government employment, and the dental hygienist, trained to carry out preventive procedures and working both in Public Health Services and in private practice. Thus we have two auxiliaries who do not work in the mouth but assist the dentist in his work, the chairside assistant and the laboratory technician; and two, the dental nurse and the dental hygienist, who do work in the mouth as a substitute for the dentist, but under his supervision.

It is common knowledge that a current international problem is the desire of the technicians to change their status so that they may work in the mouth and they are receiving support in some parts

of the world, simply because the dental profession is not supplying the essential dental services required. Let us face facts. In many parts of the world the dentist population ratio is of such a nature that there are simply not enough dentists to take care of the dental health of the population. In fact, in every country in the world there would be a severe lack of dental manpower if treatment were based on need and not demand. It cannot be denied that the failure of dentistry to delegate as many as it can of its routine tasks to auxiliaries, even with the current laws in existence in various countries, has markedly reduced the ability of the dental profession to fulfill its responsibilities as a health service.

In the social evolution we are going through it would appear that the dental profession has failed to change with its sister professions. Medicine makes use of many auxiliaries; the law has lost or voluntarily relinquished many duties that used to be its sole prerogative, and the same may be said for accountancy and architecture.

Now the question mentions educating auxiliaries concurrently with our own educational system and, in my opinion, it is this very point that has prevented dentists from utilizing the services of auxiliaries properly. Our current system of dental education does not allow for the training of auxiliaries alongside our dental students, thereby teaching them how to increase their productivity.

Under the heading "Productivity in Dental Practice," the Commission on the Survey of Dentistry in the United States states that the preventive approach to better dental health for more people will not in itself solve the dental manpower problem and makes recommendations dealing with auxiliaries as follows:

> —that dentists utilize a greater number of well-trained dental assistants;
> —that the dental profession conduct studies designed to develop and expand the duties of auxiliary personnel;
> —that as soon as the dental profession standardizes the educational programs for dental laboratory technicians and for dental assistants, consideration be given to widening the duties of these auxiliary groups. In the public interest the education of auxiliary personnel should be carried out under the guidance of the dental profession and the services performed by all auxiliary personnel should be under the supervision of licensed dentists;
> —that dentists be required by law to provide dental technicians with written prescriptions for the fabrication of dental appliances and that these regulations be strictly enforced;
> —that additional facilities be provided for the training of auxiliary personnel, both in dental schools and other institutions;

> —that dental schools give students more experience in working with auxiliary personnel, especially with dental assistants. Students should understand completely the importance that effective utilization of such personnel plays in the practice of dentistry.

The Canadian Dental Association has also issued a policy statement suggesting that properly qualified and recognized dental auxiliaries could be trained to render a broader scope of service than that presently recommended. These suggestions are of course practical and can be made effective in a country where dentistry has evolved to the advanced stage of professionalization—but viewed internationally, large sections of the population of the world are without effective dental treatment, and the problem is that we need many more dentists as well as an extension of auxiliary help.

I should like to bring to your notice the report of the WHO Expert Committee on Auxiliary Dental Personnel (1958). This committee found it necessary to make separate recommendations for the use of auxiliary personnel in countries with organized dental services and for countries with little or no dental service.

The report defines organized dental service as a dental health service rendered by private dental practice, group dental practice, voluntary or philanthropic agencies, industrial dental health schemes, and local or central government dental services. It states that the service rendered by any or all of these agencies can be augmented considerably by the maximum and efficient use of the appropriate auxiliaries and mentions dental chairside assistants, laboratory technicians, and in certain areas the school dental nurse and the dental hygienist, as being of special value.

The report suggests that attention should be given to an extension of the dental team approach.

For those nations whose people are receiving very little or no dental health care, the report recommends that each nation should give proper recognition to the dental health needs of its people by establishing a dental administration unit in its public health organization. In those areas in which there is no professional dental personnel, the report suggests the training of a "Dental Licentiate" with a course of training of not less than two years, who shall act as the normal dental practitioner. He is to be assisted by auxiliaries, one of whom would be called the "Dental Aide" and after a course of four to six months and six months in the field, the latter would be able,

for example, to relieve pain by extraction, under the supervision of the Dental Licentiate. As soon as a sufficient number of Dental Licentiates had been trained, the need for Dental Aids would disappear and different types of auxiliaries would be developed as part of the health team.

It is suggested that the educational program for both the Licentiates and the auxiliaries should be planned so that it can be lengthened over a period of years. In this way individuals could receive further training, and advance in stature and position, and a more comprehensive service be built.

I have always felt that there is a case for a reconsideration of our present educational system in that there should be opportunities for our dental auxiliaries to start at the bottom of the ladder and to advance by stages of experience and further education. With careful selection of the proper people to enter the field of dental service and a satisfactory educational level, one can visualize a man or woman starting as a dental assistant and finishing as a dental consultant or specialist, having risen through the stages of dental nurse, hygienist or technician to dental licentiate, dental specialist and stomatologist. This could be called vertical education and, although I realize that with the present system of dental education in the more advanced countries such a scheme would meet almost unsurmountable difficulties, I believe that such a plan should be studied more carefully than it has been. I suggest it would be found to be practicable and would be a much more honest attempt to provide a dental health service than many of the efforts which at present exist in the world, especially in the less advanced countries.

This may not be quite the place to speak of the present system of education, except that, as I said before, it is not conducive to including within the present system a concurrent training of auxiliaries. I think the whole concept of teaching dentistry should change in that the course should be built around the maintenance of the supporting structure of the teeth, i.e., the study and practice of periodontia. Thus the base of the dental course would be a study of the inflammatory and degenerative procedures attacking the soft tissues and bone surrounding and supporting the teeth. The whole curriculum would be built from this concept of the health of the supporting tissues of the teeth and the many influences which affect that health. Then diagnosis, conservation of teeth, replacements, cor-

rection of occlusion—all fall within their proper place in the dental course. This would also allow for correlation of the basic sciences with clinical practice from the beginning of the course, and would make the training of auxiliary services concurrently with the dental student much easier.

At a conference on the utilization and training of dental assistants held in September 1960, at the headquarters of the American Dental Association, Dr. Harold Hillenbrand, Secretary of the A.D.A., made the following remarks:

> In many countries of the world, the dental profession, under its own initiative or by force of circumstances, is being compelled to review and revise its present attitude and policies on the development and duties of auxiliaries in dentistry. In my view there are at least three major reasons which compel attention by the profession on the problems of dental auxiliaries:
>
> 1. A real or alleged shortage of dental personnel, or a maldistribution of dental personnel, tend to focus the attention of the public and of government at various levels on the real or alleged unavailability of dental service for some segment of the population.
>
> 2. The acceptance by an increasing number of citizens of the fact that dentistry is an essential part of a total health service and that dental care is no longer an optional benefit but one which must be included as an integral part of an ever increasing standard of life. Over the years the dental profession itself has taken the major role in promoting these concepts, and it is now being asked to make them a reality for more of the citizens of the country.
>
> 3. Both of the factors just mentioned, as well as many others, have made health into a major political issue in many countries. The inevitable expansion of social security systems has created a demand for more sophisticated health benefits and dental care is taking its place as one of these expanded benefits.
>
> There can be no question but that the dental profession will need to make important decisions, in the not too distant future, in regard to its auxiliary personnel. These decisions should not be made under public or political pressure, but the only way to forestall such an eventuality is to have a profession armed with information and program.

Dr. Hillenbrand, I think, very effectively sums up the present position of the dental profession in many countries regarding its auxiliary personnel.

My information regarding the communist countries leads me to believe that they have schemes which guarantee that dental assistants receive a good training leading to a statutory examination, and dental technicians have a three year training with examination. After a further year's training, at state expense, at a master dental tech-

nicians' college, the dental technician can become a master technician. All auxiliaries can attend conferences and postgraduate courses and so move into a higher salary scale. It is also of interest to note that auxiliaries belong to the same organizations as the physician and the dentist—simply to different sections of it.

Conclusion

An additional question might be added to those I have attempted to answer in this contemplation of "Dentistry and Its Future," namely why were the questions ever put, especially phrased as they are, in a rhetorical form? I have been associated with dentistry as my chosen profession for over 40 years and my whole experience, especially on an international basis, makes me want to say to every man and woman belonging to our profession: Let us not overrate our importance as a profession or our value to the community—and let us not be hypocritical about our rights of professional freedom and our high standards of practice and professional conduct. Let us each ask ourselves what we are doing as individuals to help provide a dental health service for the people of the world which will give pride and dignity to our worthy profession.

My years of administration of international dental affairs have made me realize that the future of dentistry lies in dental education, organization and administration, just as it has in the past, the difference being that in the past our profession has been built by men and women with individual interests, or at most national ones. My experience is that such interests tend to retard the development of dentistry as an international health service. I believe that in the future those interested in dental education and organization must have a purpose, something which will unite the profession all over the world, and that purpose must be to produce men and women able to practice dentistry as a health service, thus assisting the World Health Organization in its stated objective of contributing to the attainment by all peoples of the greatest possible level of health and well being in the widest sense of these terms.

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Among the chief ancient professions, dentistry was one of the last to institutionalize itself by developing formal schools for instruction. Only 120 years have passed since the establishment of the first dental school at Baltimore. It is less than a century since a dental school first became part of a university. It was only thirty-five years ago that the last proprietary dental school was closed. When one considers the recency of these events, and then sees the high standards of scientific knowledge and technical skills required of the modern dentist, the marvel is that dentistry has come as far as it has.

But to dwell on such progress would be to induce the hazard of complacency, and it is to reduce such hazards that surveys are made.

The Survey of Dentistry, 1961,
American Council on Education.

The Need for Continuing Education in Dentistry

SAM V. HOLROYD, B.S.

We have been granted both the great honor and awesome responsibility to provide the American people with dental health service. Toward this end we face three primary problems. First, we must provide more extensive care for a greater number of people. Second, we must incorporate into our practices more frequent changes and adjustments in order to keep abreast of modern practice. Third, we must adapt to a new era—a new era of intensified research, a greater closeness to the basic biological sciences, and an increased emphasis and dependence upon the understanding, control and prevention of oral pathology.

Increased Demands

To delineate our first problem, we see that the present active dentist-patient ratio is generally estimated to be about 1:1900.[1, 2] This ratio will have risen to 1:2400-2500 by 1975.[3, 4] It has been said that, "A profession exists to serve the public. Its controlling motive is to shape its practice so as to serve more and more people. When it becomes dominated by the guild spirit in its cruder sense and is content with obvious insufficiency, it fails to meet the obligations of a profession."[5]

The demands made upon us today will increase drastically in the immediate future. Our dental schools cannot provide us with reinforcements rapidly enough. Dentists must be prepared to take on the care of more patients and at the same time provide those improvements and refinements of treatment which are consistent with our constantly modernizing society. We cannot relax in the security of the tradesman who has been trained to reproduce a technique. We must all learn of and use new techniques, and we must all contribute to the formulation of new techniques and new treatments. We must all acquire new understanding and we must all contribute

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Class of 1961, West Virginia University, School of Dentistry.

This essay was judged first in the 1961 Writing Award Competition of the American College of Dentists.

to the growth of understanding. We cannot afford to be trained, we must be educated; and to allow the loss of the scholar in the routines of practice compromises the status of dentistry as a profession. "One of the marks of a profession is that it is self-regulating—with standards of education, conduct and service established and controlled by the profession itself."[6] We have been granted the protection of the law so that we can provide the American people with a high level of professional care. We are thus able to dictate our own policies and plan our own futures. We supervise and discipline our own members; we use and direct technical assistance as is, in our minds, professionally sound. If in the years to come, we cannot provide the public with a level of dental care commensurate with the demands of the time, our inadequacies may leave us open to the inroads of political direction or to the delegation of our authorities to other groups. If these eventualities seem remote or absurd, let us hope they will seem as remote and absurd 50 years from now as they do today.

It becomes our obligation to the public and our obligation to our profession to make the greatest possible use of the facilities for continuing education. By a continuous examination of the literature, a conscientious participation in dental society efforts, an engagement in additional formal education whenever possible, and an increased astuteness as to one's place in the progress as well as the practice of dentistry, we will provide greater health for the people that depend upon us. Furthermore, those things we owe to the people for the public welfare, we owe to our profession for the status it deserves.

It is impossible, but unwise even if it were possible, to mass produce dentists in an attempt to compensate for a statistical prediction of a future shortage of practitioners. Through the stimulated, yet natural, growth of our educational institutions; a new emphasis upon research, control, and prevention; and more completely efficient dental practices evolved through an increased dedication to continuous study, our profession will provide for the American people, now and always, a standard of dental health and treatment of which we and all the world can be proud. We will thus fulfill our obligations and accept more fully the people's knowledge that we serve them well.

Attainment of Modern Practice

We owe to the public a diagnosis based upon a depth of under-

standing. We owe the public a treatment encompassing the best and most modern of concepts. Some men have a modern practice only once, and that is on the day they graduate. From then on, each day, they are farther behind the times. These are the men that are today still routinely using penicillin topically. These are the men that use no epinephrine in anesthetics for cardiac cases. These are the men that ignore periodontal disease for the lack of knowledge of to how to treat it. These are the men that will extract a tooth for the lack of knowledge of endodontics. These are the men that administer the materials and techniques of restorative dentistry that were current at their graduation, forsaking in their isolation the great advances in restorative dentistry that have taken place over subsequent years.

It would be naive of us to think that all practitioners will ever be 100 per cent cognizant of all information relative to ideal practice. We must be realistic enough to acknowledge that there are factors inherent in dental practice that defy an ideal practice. But we must make every effort to exist as a profession aware of all that is required to provide the best of possible care for those that come to us with health problems. If an individual is behind the times, his dulling of the profession may be glossed over by the adequacies of those contemporaries around him, and his discreditable example may be lost in a sea of knowledgeable dentistry. But we cannot allow isolated backwardness to grow in malignant tenacity to the point that any area of our nation, regardless of how small, would lose respect for the services we provide the people. And in our present era of changing dental concepts and upon our entry into a future of greater dental research and a time of greater demand upon us, it becomes much easier to slip behind and become the man that must be compensated for.

The dental graduate is not the finished product. He has only been prepared to refine current concepts. He has an obligation to learn of and develop new concepts. He must grow within himself but he must forever reach out and embrace the progress and advancement of his profession. The repetitious refinement of past concepts cannot exist in the place of the intelligent acceptance of new ideals. Our profession is what our members are, and if we fail to make the best of that which is available to us, our profession fails to serve at its capacity. And a profession not serving at capacity concedes its rank and surrenders its public respect.

A New Era

When many of those in practice today were in school, the chief emphasis was upon a technical basis, while today the teaching is upon a biological basis.[7] One of our distinguished dental school deans states, "Many currently active dental teachers can recall when dental education was basically at the level of craft training."[8] "Dental education has come a long way since the early nineteenth century when its major objective was limited to the relief of pain and later to apprenticeship training for the practice of a craft. By the twentieth century dentistry had reached a professional level with the inclusion of the basic sciences in dental education. This led to a biological approach to dental problems with the resultant interest in research pertaining to the cause and mechanism of dental disease."[9]

When we look back over the history of dentistry we can be justly proud of our progress, and as we find pride in past accomplishments we may be inspired by future challenges. We hear of the rapid changes in the practice of dentistry,[10] and of ". . . the increased tempo of changes in the theory and practice of dentistry. . . ."[11] It is inspiring to hear eminent dentists say, "We are at the fringe and frontier of a new and marvelous epoch,"[12] and, "Dentistry may be on the threshold of a golden era."[13]

Why should we be so enthusiastic when we consider our futures? What is this new era? The time has passed when we were "molar mechanics." We can no longer treat a tooth or an edentulous space, we have begun to treat the entire individual. We have begun to assume the responsibility with the physician for the overall health of the patient. We must know of the medical problems that will modify our treatment. We must know how our treatment will modify the the medical problems. We can no longer restrict our thinking, research, and practice to the materials used in dentistry. As we treat the hard and soft tissues of the oral cavity, we are not treating an isolated entity any more than does a medical specialist acting in the area of his specialty. As we assume the responsibility for the oral cavity, we must do so with a complete mastery of the physiologic and pathologic relationships to the rest of the organism.

In the mouth we are working critically close to the vital centers of life. Certainly a knowledge of total physiology is imperative. As the scope of our treatment is broadened in the future as it has been broadened in the past, our relationship to medicine becomes much

closer. *We* must be the authorities for problems concerning the entire oral cavity. It thus compromises the status and responsibility of our profession when a dental practitioner restricts his thought to the teeth. As our responsibilities are expanded our knowledge must likewise be extended.

"Research has given dentistry and dental education stature in the world of science related to the health services."[14] We are witnessing a great increase in dental research[15, 16] and the emphasis is upon fundamental studies.[17] This is certainly consistent with our broadening responsibilities. It has been said that there is a widening gap between research and clinical practice.[18] If this is true today, with research increasing, the gap will be greater tomorrow unless we increase our efforts in a program of continuing education.

Our new era can truly be a "Golden Era" if we reach forth and accept the opportunities. Our new era can truly be a "new and marvelous epoch" if we will but expand our knowledge to support our broadening concepts and accept the fruits of research into our practices.

Our new era will not only stimulate the profession from within but will give us new vitality from without. Our practitioners are the men that send our young people into the dental schools with respect for the profession and with ideals to be fulfilled by dental study. Here is where we will gain our future strength, for a man of value will not undertake nor long endure the hard rigors of professional study without a great respect for the profession. And professional respect does not emanate from an abyss of sterility but is born in the depths of dedication to scholarly pursuits. The teachers and administrators of our dental schools must confirm the anticipation and represent those ideals that brought the students into our dental schools. But without alert, progressive, and knowledgeable practicing dentists we cannot expect to draw the new blood of vigor into our ranks. Practitioners endowed with a belief in continuous education, and with a dedication toward scholarly attainment, will not only best fulfill their responsibilities to their patients but will provide the intellectual environment which will attract new men of great value to our profession.

Conclusion

Let us think of our problem of providing dental care for more and more people as an *opportunity* to show the depth and adapta-

bility of our profession. Let us think of our problem of maintaining a modern practice as an *opportunity* to illustrate the dynamic and inspired nature of our profession. Let us think of our problem of adapting to a new era as being a magnificent *opportunity* to extend the capabilities of our profession into a broader realm of public responsibility.

Let us make a continuous effort as individuals and as a profession to reap the full benefits of progress and thereby realize the opportunities of our time.

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Editorial

BETTER DENTAL JOURNALISM

Basically (and rather tritely and obviously), dental journalism will improve only when there are better dental editors and better dental writers. The agencies involved in attaining this goal logically seem to be dental schools and dental organizations.

First, consider the role and activities of national organizations. Essentially there are only three: the American Dental Association, the American College of Dentists, and the American Association of Dental Editors. These three groups, working separately in their specific areas and collectively in the general field, will bring about needed improvement and betterment. They have done this and they are doing this. Their cooperative efforts augur well for the future.

The work of the American Dental Association through the Council on Journalism has had great influence on improvement. Their activities should continue to have an increasingly worthwhile effect. The widespread acceptance of the "Standards for Dental Society Publications," adopted by the House of Delegates of the American Dental Association, can only result in a better dental journalism. The annual Conference of Dental Editors, sponsored by the American Dental Association and the American Association of Dental Editors, inevitably will lead to greater improvement; one notable achievement has been the preparation of the "Dental Editor's Kit." Another accomplishment will come when there is a more general acceptance of professional standards in advertising and exhibits as advocated by the American Dental Association. In addition, the Council on Journalism is bringing to the attention of dental editors ways and means to support, administrate, and publish a dental periodical.

In all of these efforts, the American Association of Dental Editors and the American College of Dentists are cooperating in their several ways and within the limits of their memberships. Efforts toward improvement seem to be a total and concerted advance by all three groups. Indeed, the inter-related membership of the Council on Journalism, the Committee on Journalism, and the American Association of Dental Editors is in remarkable agreement in aims, feeling, and action. Much improvement will result from the continuance of this wholesome, cooperative attitude.

Constituent and component societies will aid in improving journalism by implementing the suggestions, and utilizing the materials provided by these national groups. This is particularly true in providing adequate support for their periodicals, in the careful selection of their editors, and in providing adequate honoraria for their editors consistent with the time expended and the ability to create a worthwhile periodical.

So far as the dental schools are concerned in this matter, there are problems. Greater attention to courses in use of the library, technical and scientific writing, and utilization of the literature is desirable; promotion and expansion in these areas would be ideal. But realistically there are the great items of time and teachers—more time and better qualified teachers for instruction. With the current and soon-to-be increased necessity for training men and women to render a still greater health service to still more people, fitting these "extracurricular" courses into the already overcrowded instruction schedule is indeed a problem.

Much more study, by all groups concerned, for an improved dental journalism will have to be forthcoming if this school situation is to be bettered and bolstered. And it might prove insurmountable.

If we would have continued improvement, we must have better editors and writers. National dental organizations, notably the American Dental Association, the American College of Dentists, and the American Association of Dental Editors, should continue and should expand their current efforts. Constituent and component societies should be made increasingly aware of their responsibilities in this matter of improvement. And lastly, the role the dental schools should play, and what they will be able to accomplish in supplying better editors and writers, should be studied more intensively by all three groups, perhaps assisted by the American Association of Dental Schools.

The American College of Dentists Central Office—St. Louis

O. W. BRANDHORST, D.D.S., D.Sc.
Secretary

Acceding to the suggestions of numerous Fellows of the College that the membership, generally, be informed more fully of the Central Office facilities in St. Louis, the following picture story with brief comment is submitted. This is not a substitute for an on-the-spot observation, but a means of encouraging the Fellows to visit the headquarters to see first-hand what has been developed and how it functions.

In order to develop a better understanding of, and reason for, some of the special features, a brief history of the College and its activities seems desirable.

The American College of Dentists was organized in 1920. Those who established it believed that there was need for an organization that would be imbued with the highest ideals for the dental profession, and would also lend its influence to every movement having for its purpose the advancement of the profession and the betterment of dental services to humanity.

The objectives as then set down in the Constitution were:

> To promote the ideals of the dental profession;
> To advance the standards and efficiency of dentistry;
> To stimulate graduate study and efforts by dentists;
> To confer Fellowship in recognition of meritorious achievement, especially in dental science, art, education and literature.

Forty years have elapsed since that time—years that have witnessed changes in almost every field of endeavor. Truly, it has been a period of development and progress that has tested the soundness of many theories, and has set up new approaches and ideals in many human endeavors.

It is of more than passing interest that the present Constitution of the College, adopted in 1958, should project the same objectives as in 1920, except that the years of experience have suggested new approaches and increased determination for the attainment of our objectives. The present objectives read:

To promote the ideals of the dental profession;

To advance the standards and efficiency of dentistry;

To encourage graduate studies and continuing educational effort by dentists;

To encourage, stimulate, and promote research;

To improve public understanding and appreciation of oral health service;

To encourage the development and use of measures for the control and prevention of oral disease;

To cooperate with other groups for the advancement of professional relationships in the interest of the public;

To recognize meritorious achievement, especially in dental science, art, education, literature, and human relations by conferring Fellowship in the College on those persons properly selected to receive such honor.

The objectives of the founders apparently have stood the test of time, and continue to be the broad foundation upon which has been erected the structure known as the American College of Dentists and upon which it proposes to expand its usefulness to the public and the profession.

The early years were devoted to careful planning by individuals and groups. Gradually, committees were established to undertake specific tasks. Most of the activity of the committees was carried on by the chairman through correspondence, with an occasional meeting, usually at the time of the annual meeting. In spite of such handicaps, progress was registered in many areas.

It was in 1953 that the Board of Regents decided that the time had arrived to provide full-time employment and adequate facilities for carrying on the ever-increasing activities of the College. Our first full-time facilities were established at 4221 Lindell Boulevard in 1953. Shortly thereafter, arrangements were made to have committees meet in the Central Office annually, to spend several days discussing their problems and developing their reports.

It is not for the Secretary to evaluate the success of such developments. Others will be able to do this with less personal perspective. However, it was in the enthusiasm engendered by such efforts that it became my happy privilege to plot the present "home" of the College when a new building was being erected across the street. In the Fall of 1958 the present quarters were occupied.

The plans gave expression to what was considered basically essential and desirable to support the various efforts for attaining the objectives of the College. It was felt that the Central Office of the American College of Dentists should be in keeping with the high

FIGURE 1. The Lindell Building, 4236 Lindell Boulevard, St. Louis, Mo.

character of the organization it represented—impressive and geared to service. Modern time-saving equipment to keep abreast of developments and efficiency in performance were considered essential. A primary objective had to be the development of an efficient office to carry on the routine procedures of the College. Future needs and possibilities also were given due consideration.

As these basic principles were being considered, some of the more detailed problems asserted themselves:

Facilities for holding conferences and committee meetings in the Central Office.

The setting up of an accurate record system, not only as related to financial matters, but also as related to many other details such as nominations and membership matters.

Accurate filing systems needed to be set up and expansion provided for future years.

Storage facilities needed to be provided for books and publications, the numerous pamphlets available and in process, and the archive material already in substantial amount.

Development of a system for making readily available the current and accumulated material pertaining to the various committee studies and varied areas of interest seemed important.

Consideration was given also to the desirability of making the records of the College readily accessible to future office personnel.

The following picture story attempts to tell you how we have approached this task.

The Central Office of the American College of Dentists is located at 4236 Lindell Boulevard, which is the main east-west thoroughfare of the City of St. Louis. The location is in the mid-town area of the city, easily accessible to all transportation and hotels. The College is located on the fourth floor of the newly built fireproof and air-conditioned building, and occupies the entire fourth floor front and wings on east and west, about 1,600 square feet (Fig. 1).

FIGURE 2. Hallway and Office Entrance.

FIGURE 3. Conference facilities in central area.

Elevator service is supplied by an automatic self-service elevator. Figure 2 shows the elevator door and the entrance to the Office.

As you open the door and step in, you enter the central portion of the Office (Fig. 3). A large conference table, easily accommodating six or eight persons, occupies the central area to the north. This is where committee meetings and other conferences are held. These facilities can be extended to accommodate twice that number of persons by adding folding tables at one end.

Attention is called in Figure 3 to the cabinet installation on the north wall. Throughout the building the heating elements are installed at the floor. In order not to lose the space over the radiators and to provide maximum storage facilities, a super-structure was designed with three basic functions: 1) a grill front for the radiation with pleasing appearance; 2) storage facilities for pamphlets, brochures, etc., and 3) a work top to expedite segregation and collection of material. Such facilities have been developed throughout the Office area.

FIGURE 4. The central area looking toward the entrance.

Figure 4 is a view of the same area looking toward the entrance. On the right of the door is a bookcase that contains a complete set of the *Index to Dental Literature;* a complete bound set of the JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS; a complete bound set of the *Journal of Dental Education*; and a set of ten volumes on *Dentistry as a Health Service*. The availability of this material makes easy reference possible for committee discussions and conferences.

The cabinet to the left of the door in Figure 4 is a reconstructed cabinet to provide drawer storage space for blank membership and award certificates. The wall-panel nearby registers time, temperature, humidity and pressure; ornamental and serviceable, it is a relic from the Secretary's old office. Later reference will be made to the chart area and the tall bookcase shown on the right in this picture.

Looking to the right as you enter the office (Fig. 5), you see a large desk, ten feet long and five feet wide. The base of this desk was formed by bolting ten 30-inch metal filing cabinets together. The drawers of these cabinets are of several sizes and spotted for their usefulness as related to the various service areas. Provision is

FIGURE 5. South view of the large desk.

FIGURE 6. North view of the large desk.

made for three desk or leg spaces. A flat top, five by ten feet, covers the cabinet arrangement, with a depressed area on the far side to accommodate a typewriter. The upper surface and edges are covered with stippled green Formica.

Upon this flat surface a "pigeon hole" super-structure has been placed, again Formica covered—top surface and edge in stippled green and the "pigeon holes" and drawers in black. On one side, drawers have been made to fit into the pigeon holes (Fig. 5). On the other side (Fig. 6) they are open, providing storage and easy access to numerous special forms, pencils, and many other items, all within easy reach of the operator.

Figure 7 shows the end view of the desk with its "pigeon holes." A part of our record system consists of a large ledger used to record receipts and disbursements. The items are distributed in columns under various headings for budgetary purposes. This section of the desk provides facility for "spreading" the long pages of the ledger for these operations.

FIGURE 7. End view of the large desk.

FIGURE 8. Files for membership correspondence.

Figure 8 shows the battery of files just opposite the large desk. These files contain the correspondence with Fellows of the College. A similar battery of files to the rear of this series, provides facilities for filing correspondence and material other than membership correspondence. Instead of setting up partitions between the several sections of space, cabinets or files have been placed back to back and thus form the dividers between areas and save space. These files are set on a 4-inch base, making possible the installation of a cove base (throughout the suite) which makes for easy floor care. One of the file drawers is open to show method. Each Fellow has

at least one folder, kept upright in a Pendaflex pocket. The storage facilities in the cabinets over the files are also shown. Cabinets were constructed over the files to make use of this space for storage.

Figure 9 shows the northeast end of the office. Here we have installed six double Kardex safe units, each housing two Kardex files. The space above the files is used for housing important material such as minutes and documents. In these files are kept the financial record of each Fellow, as well as certain pertinent information taken from his nomination record. Kardex color signals are used to designate the individual's special category, such as Army, Navy, Air Force, Veteran's Administration, or life membership status, etc. These safes are set on metal stands about twenty-two inches high. In order to make the most use of space, a louvered front with sliding doors was constructed to eliminate storage "eye-sore." As a result, it is possible to store more than a year's supply of mailing envelopes for the JOURNAL and other materials under the Kardex stands. The louvered arrangement (turned down) is necessary to provide air

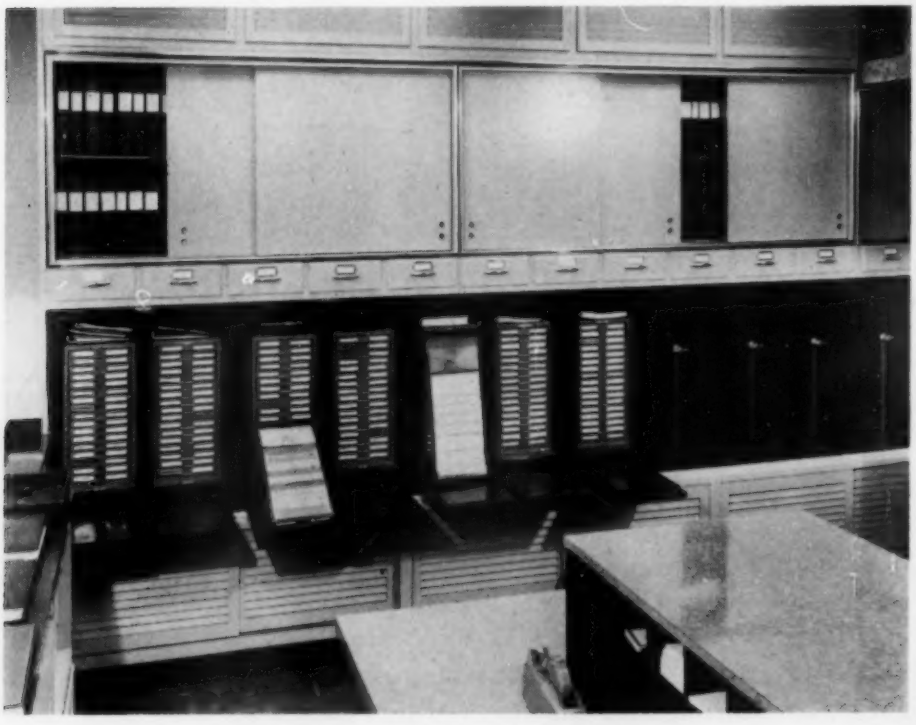


FIGURE 9. The Kardex safe installation.

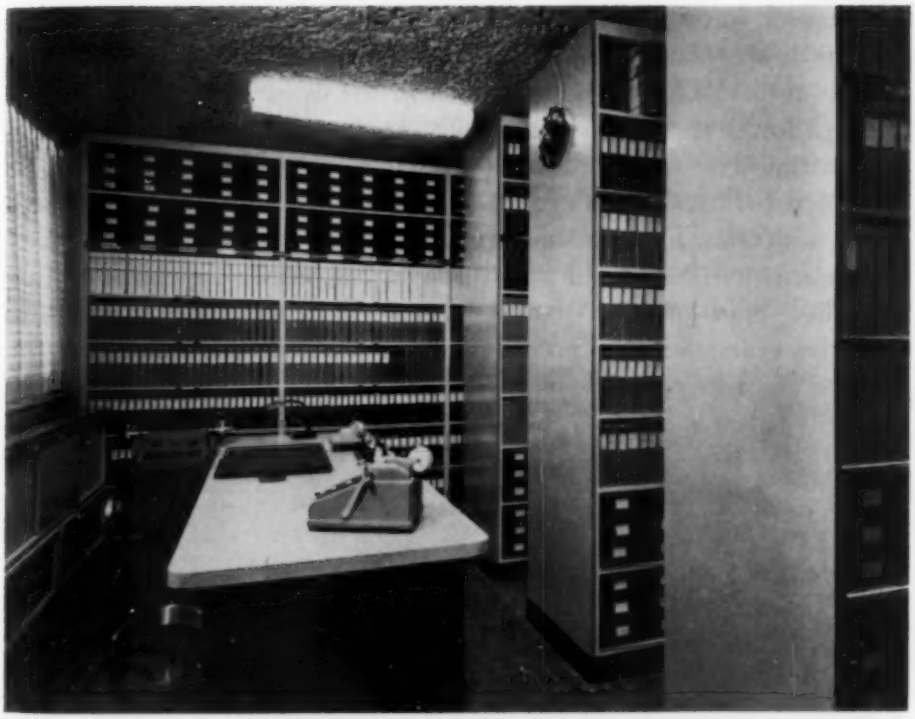


FIGURE 10. The record room.

circulation for the heating elements against the wall in the back of the safes. Again, to further expedite this air circulation, a one-foot high louver arrangement was necessary near the ceiling. Louvers this time are turned upward to make material stored in this space invisible. Cabinets with sliding doors have been installed over the Kardex area with a drawer section immediately over the safes. These drawers contain the supply material used for this installation. This principle of having supplies close at hand has been observed throughout the office. The large "over safe" cabinets are used for storing archive material, such as copies of the JOURNAL, old documents, etc. Each section has an index indicating what materials are housed there.

As we turn to the right from the Kardex safe area, we enter the record room (Fig. 10). Here again a large work-top for a desk has been provided by adding two 15-inch file cabinet units to the desk, and a flat Formica finished top to create a working surface seven and one-half feet long.

The real feature of this section of the Office is the filing system. All boxes are plainly labeled as to contents. A box that shows no label is empty. The flat boxes shown in the upper two shelves to the left and lower shelves to the right, contain reference material, such as reprints. The row of light colored vertical boxes contain papers presented before the College by officers of the College, such as presidents' addresses, inaugural addresses, and the like. In the next rows downward, will be found the following material: papers presented by other than officers; panel discussions; Convocation programs over the years; Section programs; miscellaneous material (bottom shelf). Each row of boxes is a different color.

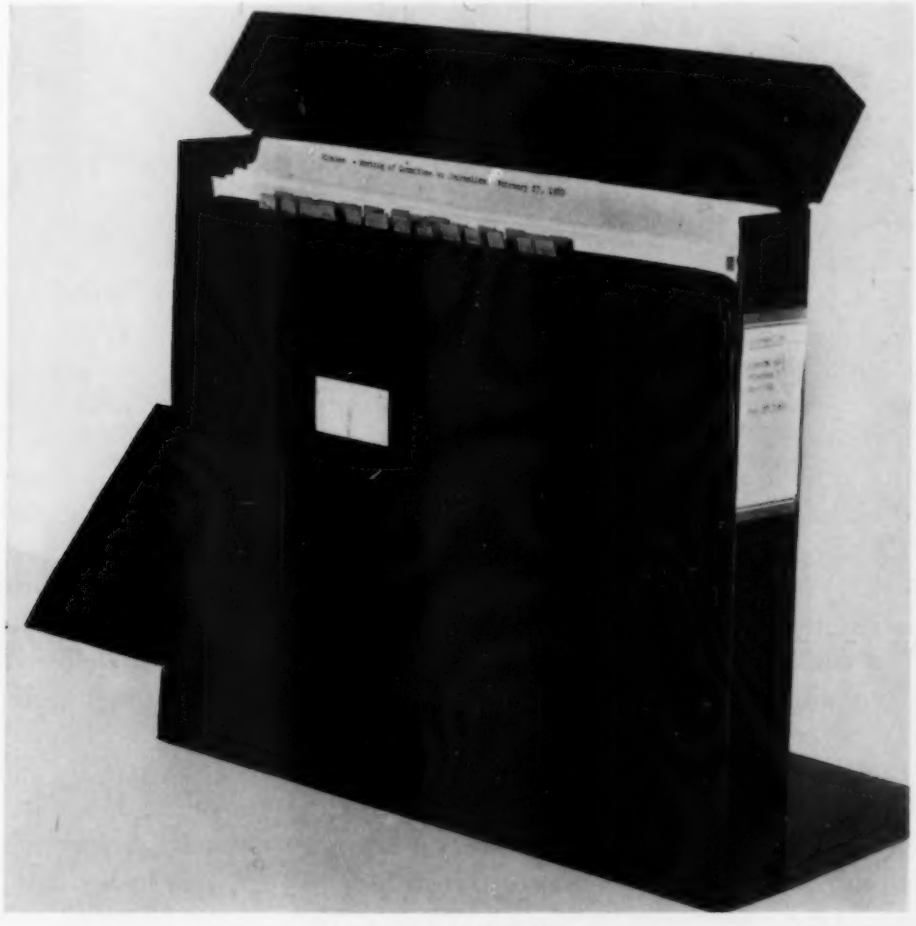


FIGURE 11. Filing box.

To the right will be seen "stacks" of shelves. These shelves are made in units for easy moving if necessary. Units are all four feet wide and twenty-five and one-half inches deep, with a divider in the middle to provide shelf space from both sides. The lower unit is six shelves high and the upper one, two shelves high. They are mounted upon one another and side by side and held with a few screws. A facing panel covers the joints.

Something should be said about the box file used here (Fig. 11). These boxes were especially made in two sizes—one and one-half and

FIGURE 12. Files and special safe.

two inches in width. They were patterned after the Amberg transfer case, readily available on the market. We found that by horizontal filing instead of the usual vertical method, it was possible to have eight shelves instead of seven. The chief feature of the box is accessibility and visibility of the material, since the lid folds back and the flap downward. We have attempted, for convenience, to associate certain colors with certain activities and have used more than two dozen colors for these boxes in this way. For instance, socio-economic matters are filed in maroon colored boxes; light green for education; dark green for recruitment; black for journalism; dark blue for prevention, etc.

Looking from the record room back toward the Kardex safes (Fig. 12), attention is directed to the two five-drawer upright file cabinets. These files have a special function. Space is provided in them for the active committee material of the College. During the year material pertinent to each committee's interest is dropped into its proper slot in the file. When the committee plans its deliberations, this accumulated material is brought forth for consideration. This has been found a convenient method to accumulate material. After a committee has held its meeting, the material is filed in the box file, properly labeled, and placed in the shelf area designated for that particular activity.

Next to these cabinets is another two-section safe which houses our master membership list. Figure 13 shows a "page" of this. When a register of membership is contemplated, these "page" forms are photographed, reduced in size and printed. This saves type-setting costs. The cabinets over the safe house a supply of heavy envelopes of various sizes.

Figure 14 is a view of the battery of file cabinets used for other than membership correspondence. Overhead drawer section, and cabinets with sliding doors, offer more storage facilities. This corridor leads to a hall door, a second exit or entrance to the suite.

Returning now to the central area of the Office and looking westward from the desk and conference table, you see two tall cases (Fig. 15). In the one to the right will be found 36 large albums, fourteen and one-half inches high and twelve and one-half inches wide. In these albums interesting historic material is being assembled. (Several of these albums are shown open in Figure 16.) The headings under which this is being done are these:

ACTIVE FELLOWS

Numerals following name indicate year of conferring of Fellowship

* Indicates Organizers and Founders of the American College of Dentists

Abel John S '30
1001½ Santa Monica Los Angeles 25 Calif

Abelson A J '23
8610 Bay Parkway Brooklyn N Y

Abelson Josephine May '51
Box 267 La Quinta Calif

Abbey Leon L '44
501 S E 2nd Court Ft Lauderdale Fla

Abbott Thomas Richard '38
1301 S 28th St Milwaukee 4 Wis

Abramson Irving I '54
106 Medical Arts Bldg Baltimore Md

Ackert Harold Vivian '34
1431 Chili Ave Rochester 11 New York

Adair Wilbur G '30
2040 32nd Ave Vero Beach Fla

Adams Carl W '44
371 Fifth St San Bernardino Calif

Adams Frank L '49
Suite 202 Dental Arts Bldg North Oakland St Pasadena Calif

Adams J William '50
1006 Hume Mansur Bldg Indianapolis Ind

Adams John Davis '51
School of Dentistry University of West Virginia
Morgantown W Va

Adams Kinley K '49
T A Livesley Bldg Salem Ore

Adams Philip Edwin '37
170 Marlborough St Boston 16 Mass

Adamson Kenneth Thomas '53
111 Collins St Melbourne Australia

Addelston Harold Kane '38
404 Madison Ave New York N Y

Agins Theodore Cato '34
20 Nassau Drive Kensington Great Neck L I New York

Agnew Jr Fremont T '38
1520 Temple Bldg 16 Franklin St Rochester N Y

Aguilar Enrique C '56
A V Castillo de Miramar No 15 Lomas Reforma
Mexico City Mexico

Aigeler James E '37
1116 Medical Arts Bldg Philadelphia 2 Pa

Allinger James Joseph '60
927 Delaware Ave Buffalo 9 N Y

Altenberg Morris S '33
618 W Lombard St Baltimore Md

Alta Clemens H '49
615 Dennis Dillon Bldg Nashville Tenn

Altman Harold M '49
501 Locust Ave San Antonio 9 Tex (Army-regular retired)

Albert Archie A '43
3 Exchange St Pawtucket R I

Albert Karl Harry '50
901 Chestnut St Lebanon Pa

Albertson Galen L '36
100 O'Connor Drive San Jose Calif

Albright Cecil Raymond '43
97th Medical Detachment (DS) APO 696 % P M New York N Y
(Army - regular)

Allen Herbert R '29
P O Box 101 Kimball Neb

Aldrich Frederick Raymond '48
17 North Harding Road Columbus 9 Ohio

Alexander Howard '33
4740 N E 27th Court Ft Lauderdale Fla

Alexander Leonard Clayton '34
404 North 10th St Milwaukee Wis

Alexander M M '20
1776 Eye St N W Washington D C

Alford Frank O '33
1002 Liberty Life Bldg Charlotte N C

Allen Clifford E '44
% Samuel Allen 404 East 2nd St Dixon Ill
(Navy-regular, retired)

Allen D Blanton '13
Berryville Va

Allen Edward F '20
4703 Scott Ave St Louis Mo

Allen Hunter R '40
1000 S 19th St Birmingham Ala

Allen J Stafford '36
501 Union Trust Bldg Providence R I

Allen Newton Erwin '41
410 Church St Selma Ala

Alling Charles Calvin '36
Ireland Army Hospital Ft Knox Ky (Army-regular)

Almtedt William B '33
600 Northern Mutual Bank Bldg Little Rock Ark

Alter Charles Hemphill '45
1850 N Garey Ave Pomona Calif

Amaturo Frank M '40
912 Wightman Ave Evanston Ill

Amies Arthur '38
% Australian College of Dentistry 131 Spring St
Melbourne Australia

Amler Melvin H '40
600 Park Ave New York 21 N Y

Anastasiou Marion '36
1913 Walnut St Philadelphia Pa

Amundson Norbanie C '46
2011 West Superior St Duluth Minn

Anderson Albert L '37
1115 Fourth Ave San Diego Calif

Anderson Alvin B '40
Hamilton Bank Bldg Knoxville 2 Tenn

FIGURE 13. A "page" of the membership file from which the register is developed.

The American College of Dentists—A photographic review of organizers, founders, and Board of Regents

Nomination to Fellowship

Ceremonial Procedure

Convocation Programs

Fellowships Conferred

Sections of the College

Awards by the College

ACD Lecturers and Lectures

Fellowships and Grants-in-Aid

Books (by the College)

THE JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS

The ACD *Reporter*

Pamphlets and Brochures of the College

Committee Activities

Dental Education

Dental Research

FIGURE 14. Corridor leading to hallway.

FIGURE 15. The west view.

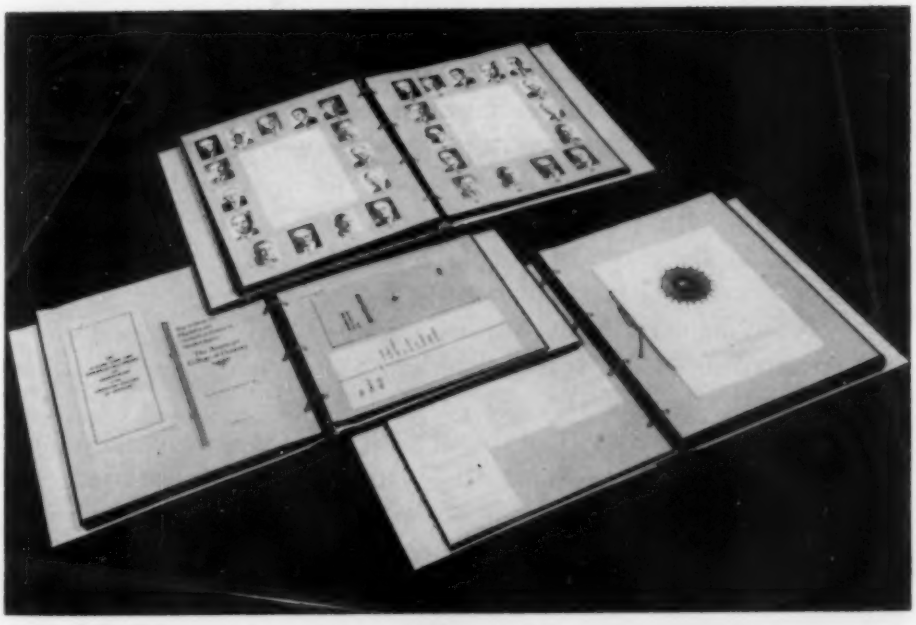


FIGURE 16. Historic Albums.

The large bookcase in the center of Figure 15 contains books authored by Fellows of the College. We are glad to receive these from the authors. The collection is increasing month by month. The large book in the center of the case is a complete record of the 1959 New York Convocation of the College, when the College was host to the American Dental Association and the Federation Dentaire Internationale in commemorating the Centennial of the American Dental Association.

Figure 17 is a close-up of the book, and Figure 18 is the book open showing the assembly and the Convocation speaker, the Honorable Arthur S. Flemming, then Secretary of the Department of Health, Education, and Welfare of the United States. Only three volumes were prepared. One copy was presented to the American Dental Association; one to the Federation Dentaire Internationale; and the third was one retained for the archives of the American College of Dentists.

Looking back to Figure 15, between the two book cases is the entrance to the Secretary's office. Figures 19 and 20 are interior views of this office. Again, bookcases house important volumes of various kinds. In the cabinets under the window shelf on the right (Fig. 19) periodical dental literature finds its filing place.

Figure 15 also shows a corridor to the left. This hallway leads to another record room and the work shop. However, the walls of this corridor provide facilities for some special features.

An eight-inch deep cabinet has been set into a wall space and into the several sections of this cabinet, brackets have been fashioned on which frames containing charts are hung and used for demonstration purposes from time to time. As shown in Figure 21, these wings swing out like the leaves of a book. The large chart shown on the left projects the various facets of dentistry as a health service and indicates on the far margin, the various organizations that are or should be interested in the associated problems. This chart is in reality the work chart of the College.

Figures 22-26 show more of these charts, and the outlines developed in the process of considering the many problems associated with dental health service. Figure 26 shows a chart in the process of development. On it we hope to project the recommendations of the Commission on the Survey of Dentistry, 1960.

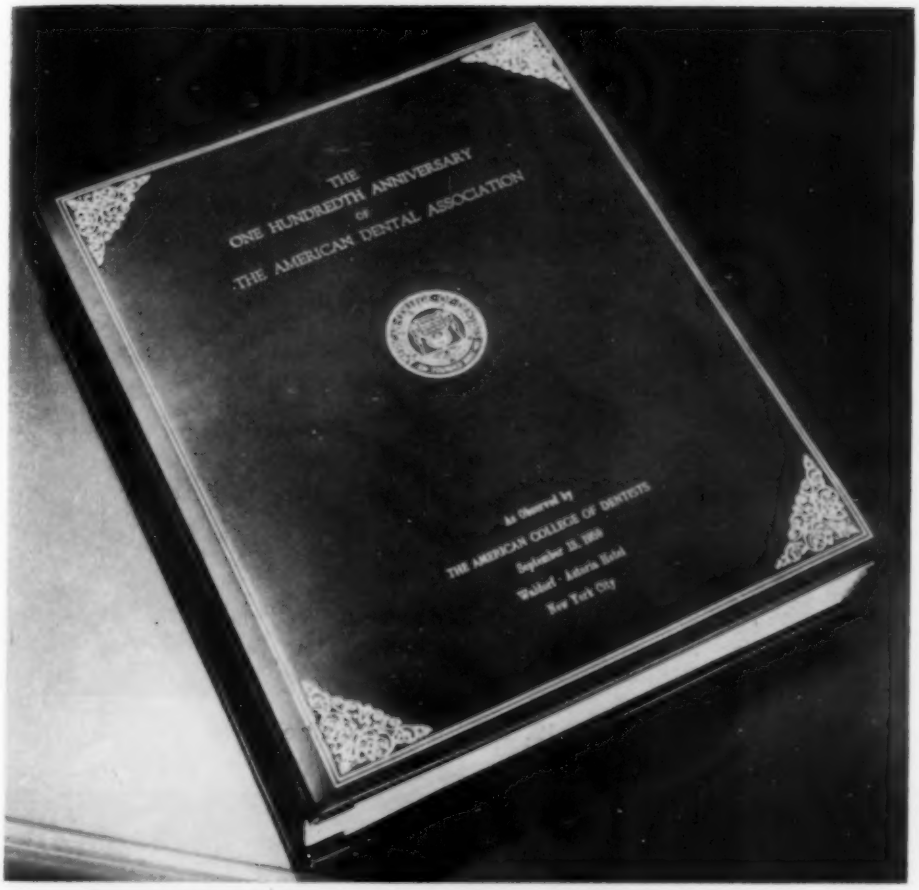


FIGURE 17. The Centennial Book.

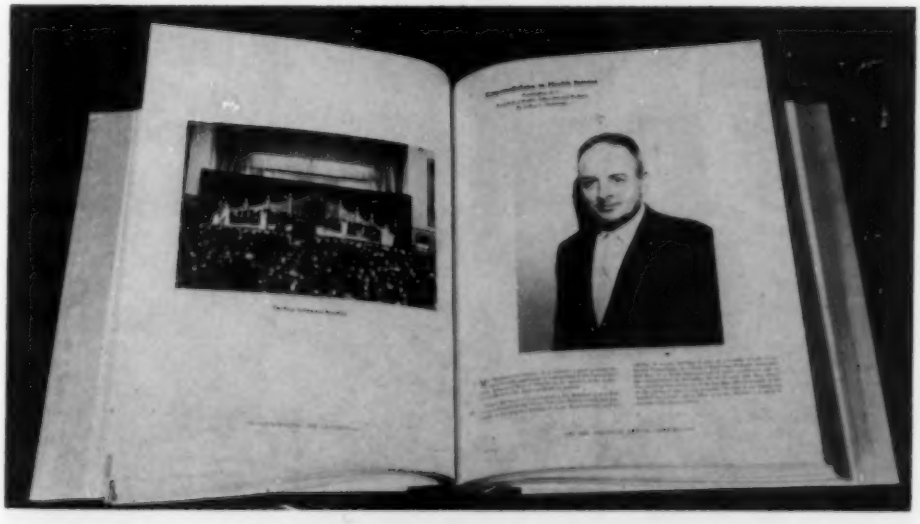


FIGURE 18. Centennial Book open.

FIGURE 19. The Secretary's office.

FIGURE 20. The Secretary's office.

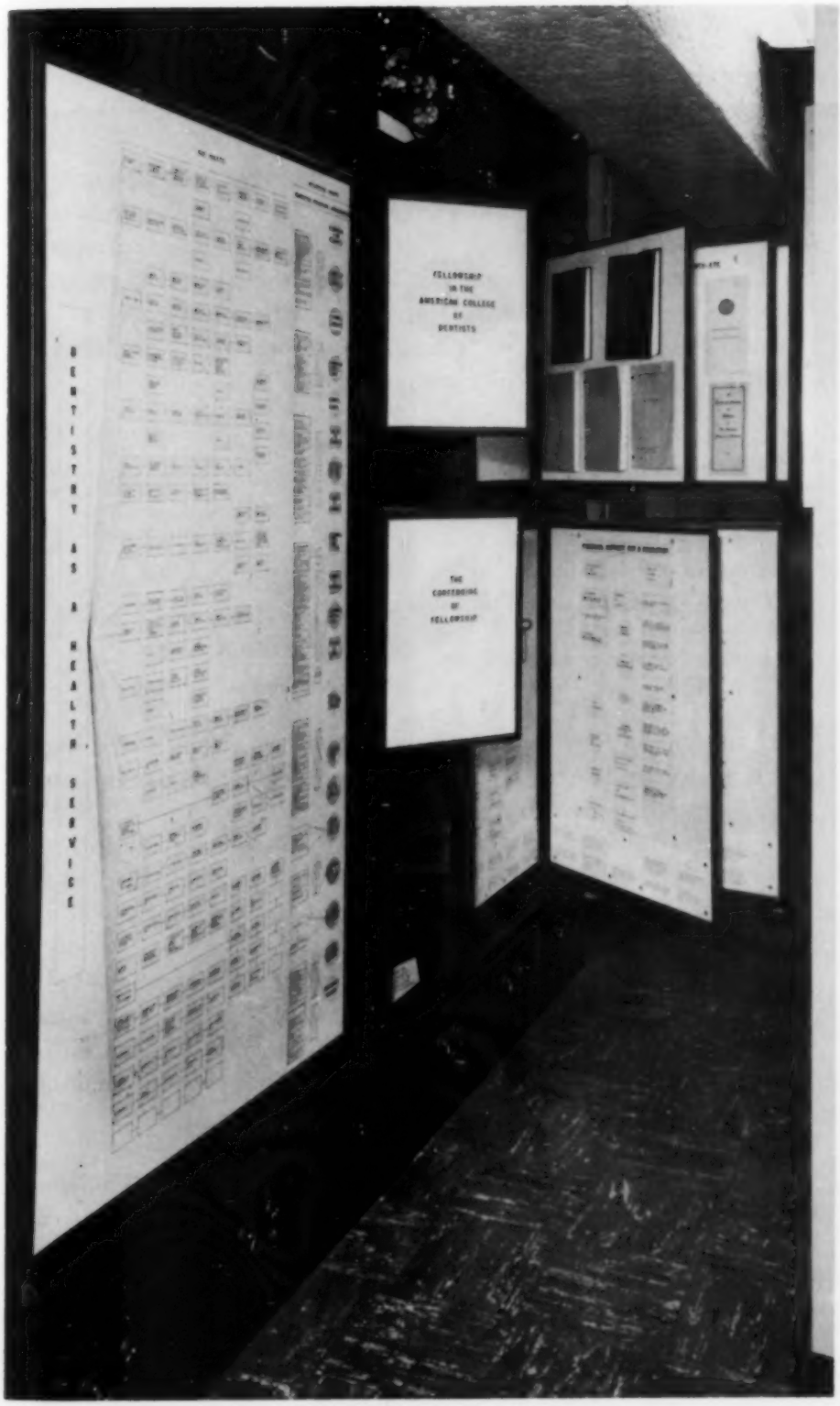


FIGURE 21. Dentistry as a Health Service.

Passing down the corridor and looking back, Figure 27 shows several views of the smaller wings. The lower one offers the background for a lecture or indoctrination on the importance of committee work. The columns support an over-structure which represents "Dentistry." The columns rest upon foundation stones, labeled by various terms that represent the facets of dentistry as a health service and areas of interest in committee studies. The story follows that if the foundation stones begin to weaken, the super-structure is in danger.

Behind this chart are other wings outlining the procedure for each committee. Here is a typical example:

An outline of the objectives of the committee

Approach to studies to be made
- Through initial research
- Through questionnaires
- Through gathering of available material
- Through preparation of new material

Areas to be studied

Evaluation and basis of appraisal
- Ethical standards
- Patient's interest and well-being
- Community interest
- Profession's interest

Conclusions and recommendations

Attainment plans

Projection and support

The upper chart in Figure 27 shows some of the areas of special interest at present. Other charts outline additional activities—publications, pamphlets, brochures, etc.

The central area charts (Fig. 21) have to do with eligibility to membership in the College and the conferring of Fellowship, as well as the symbols used in ceremonial procedures. Figures 28 and 29 show some of them.

On other "wings" will be found the various award certificates given by the College in recognition of unusual services or attainments. They are projected here to acquaint the membership with them. Invitations to Fellowship—honorary and active—are in themselves recognition of meritorious service.

Two special awards are provided (Figs. 30-31):

1. The William John Gies Award for Fellows of the College in recognition of leadership and unusual services to the profession; and

2. The Award of Merit for persons other than Fellows, for distinguished services to the profession.

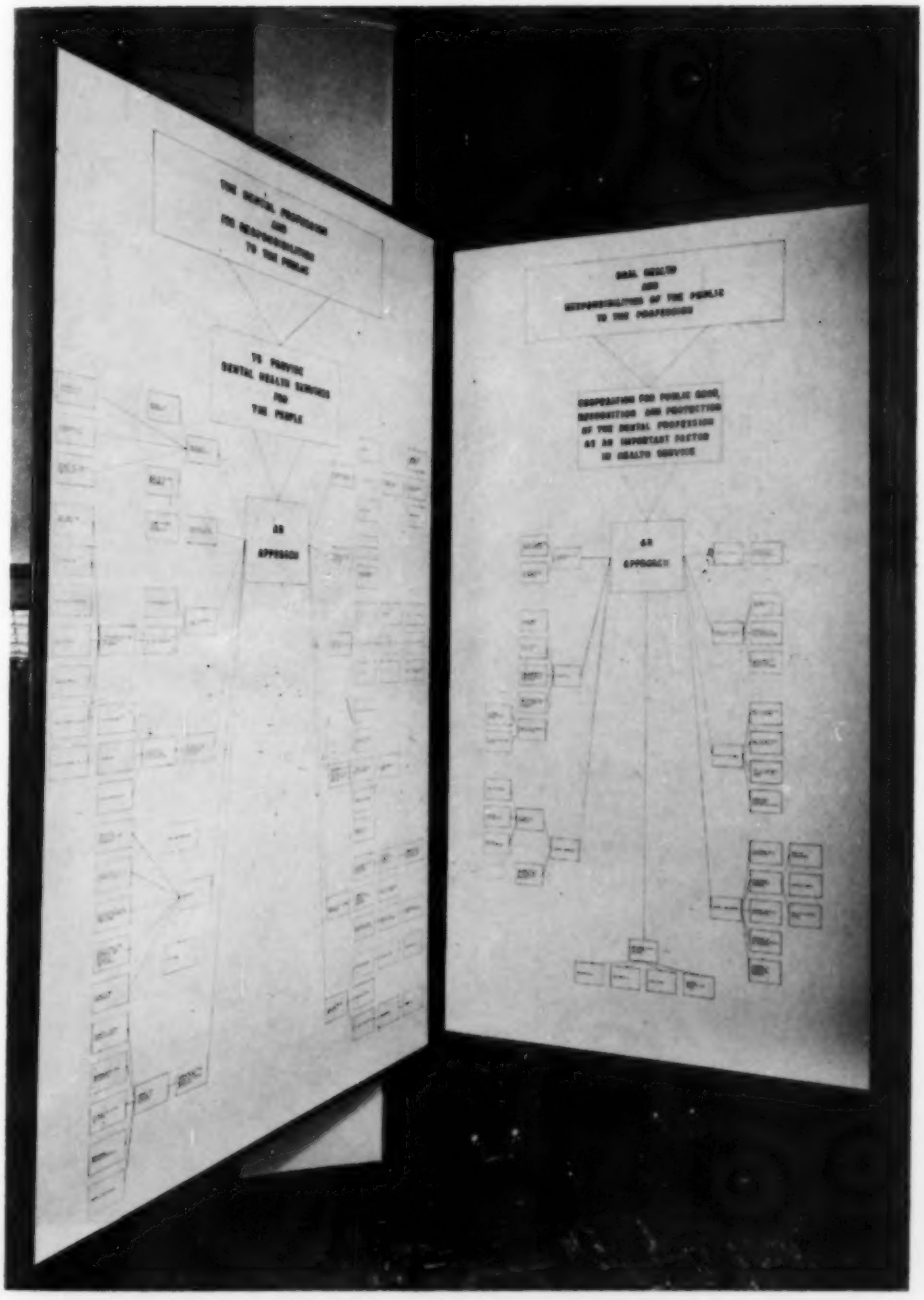


FIGURE 22. The profession's responsibilities to the public and the public's responsibilities to the profession.

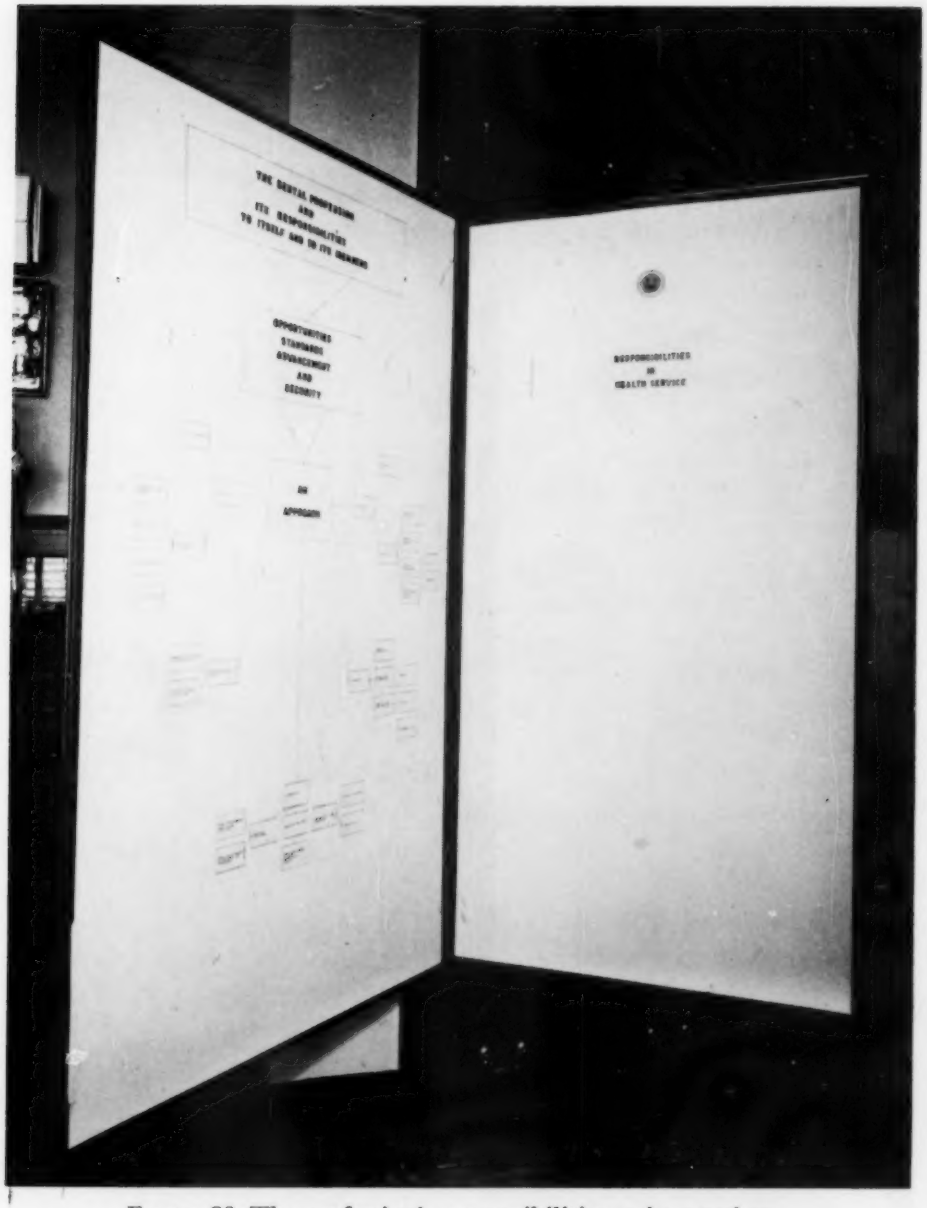


FIGURE 23. The profession's responsibilities to its members.

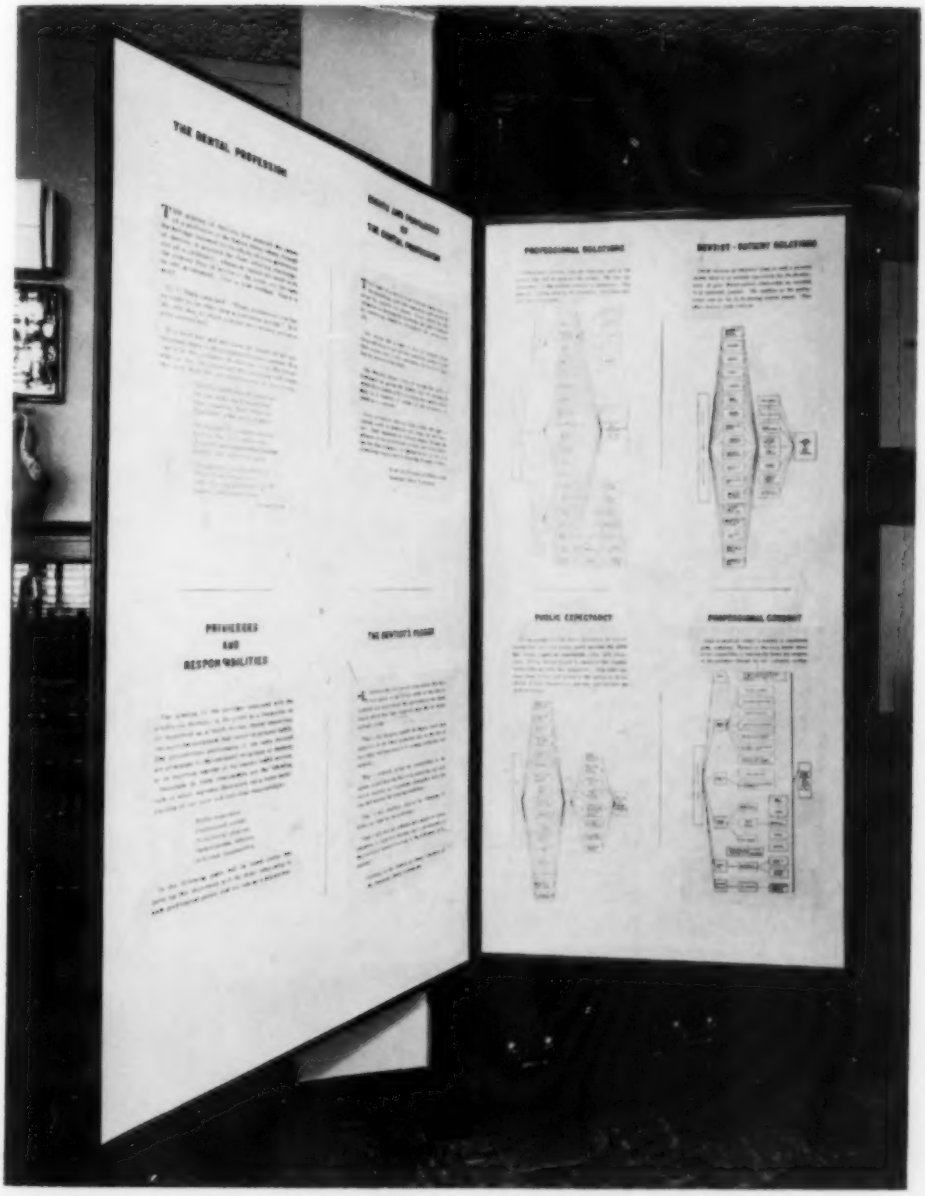


FIGURE 24. Various relationships.

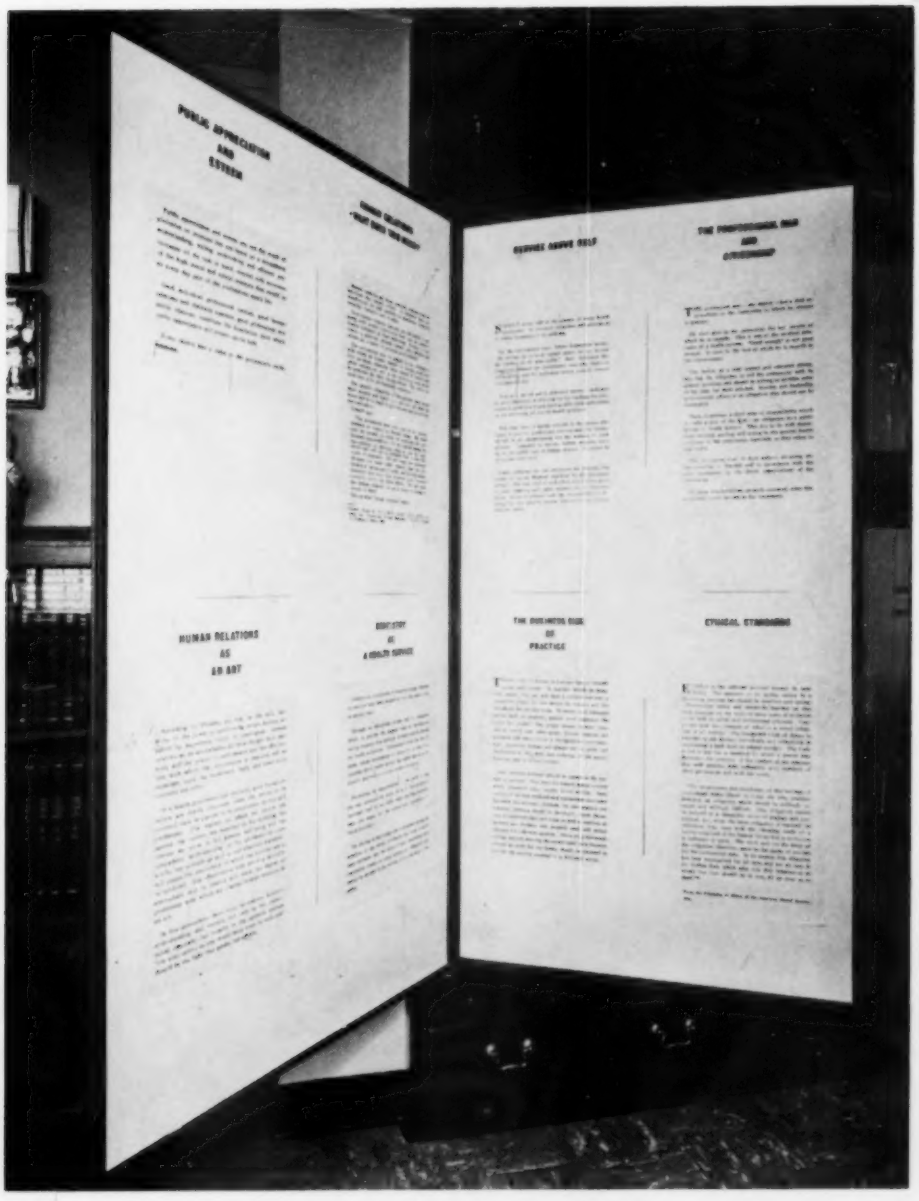


FIGURE 25. Principles of Conduct.

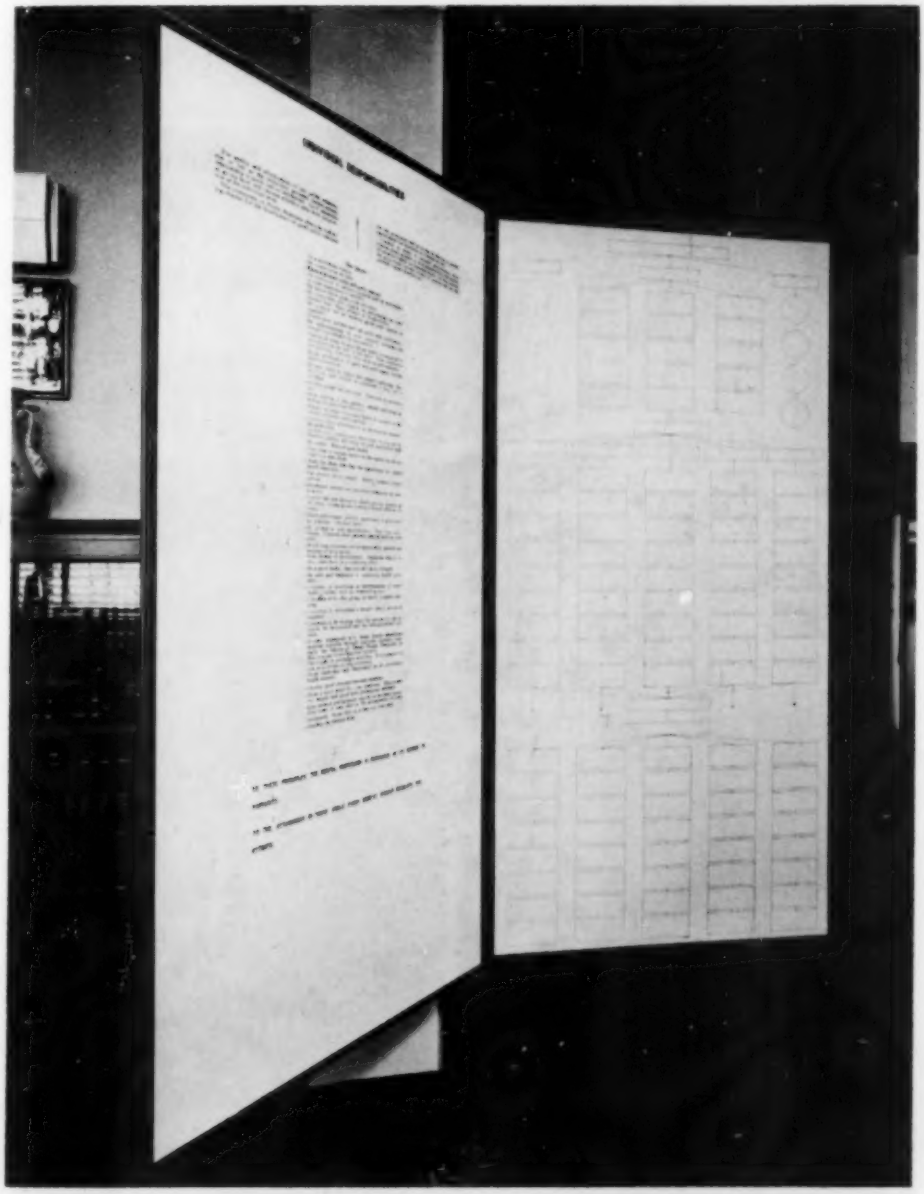


FIGURE 26. Responsibilities of the individual. A chart in development.

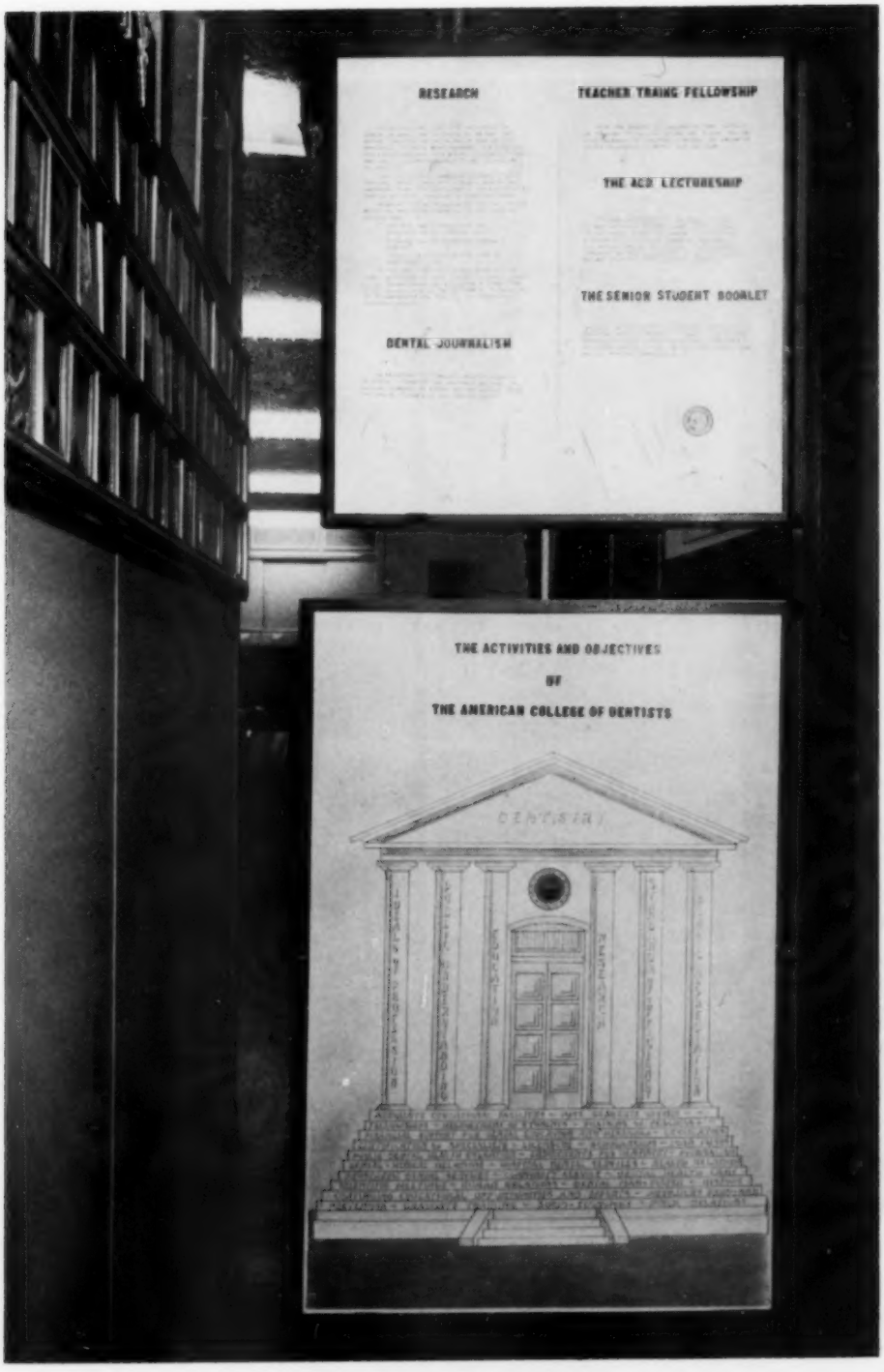


FIGURE 27. Some of the activities.

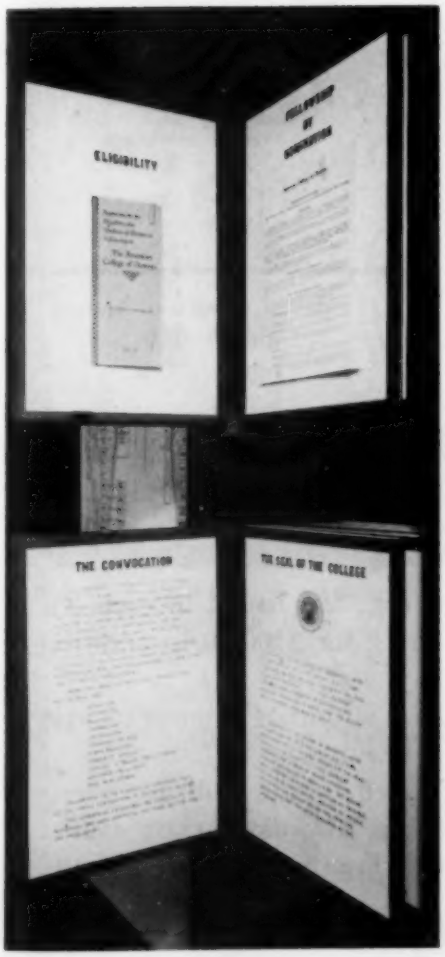


FIGURE 28.

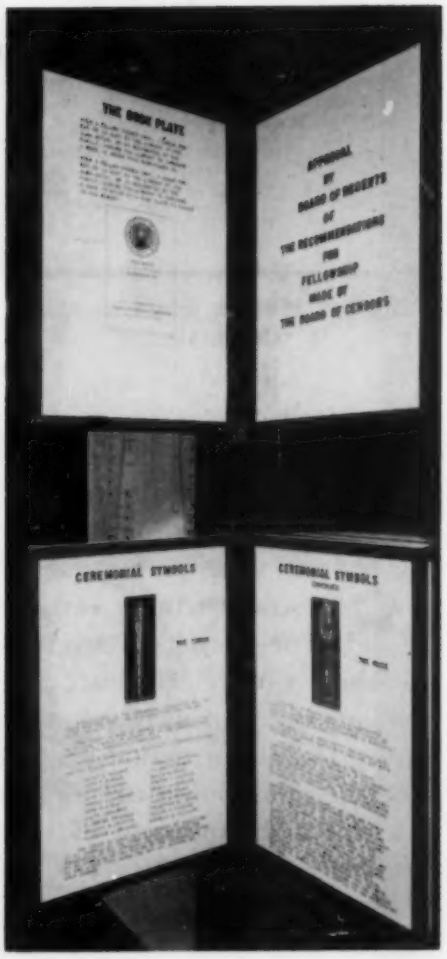


FIGURE 29.

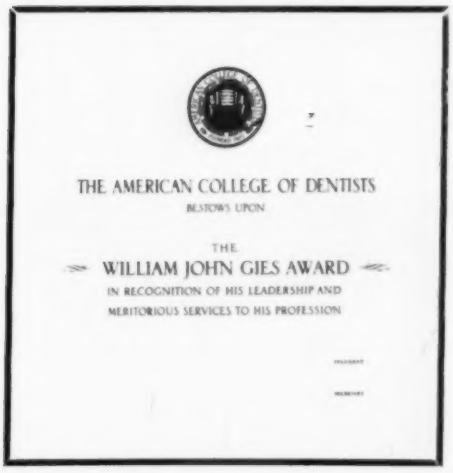


FIGURE 30. William John Gies Award Certificate.

FIGURE 31. Award of Merit Certificate

The College presents awards to the winners and participants in the Writing Award Competition, under the direction and supervision of the Committee on Journalism. There are two of them:

1. The certificate for the national winner (Fig. 32), who also receives a check for $500.00; and

2. The school winner certificate (Fig. 33), issued to each school winner. The runner-up receives a check for $100.00 in addition to his school winner certificate.

The purpose of the Competition is to stimulate interest in writing among the senior dental students.

While mentioning the awards granted by the College, reference should also be made to the Fellowship Awards that are available. There are two of these: The Teacher Training Fellowship and the Exchange Fellowship.

The Teacher Training Fellowship is intended as an aid to the person who wishes to teach or who wishes to acquire new knowledge in teaching methods. It has an annual stipend of $2,500.

The Exchange Fellowship is intended as a means of exchanging knowledge between countries or sections. It is based on a travel and expense allowance plan.

There is also a provision, known as the William John Gies Travel

American College of Dentists
PRESENTS
The NATIONAL AWARD
TO
FOR HIS PAPER
2nd Annual Writing Award Competition 1958
WHICH EXEMPLIFIED THE QUALITIES OF DENTAL PERIODICAL JOURNALISM AND WAS SELECTED FIRST IN COMPETITION AMONG GRADUATING STUDENTS IN THE UNITED STATES AND CANADA

FIGURE 32. The National Winner Award Certificate.

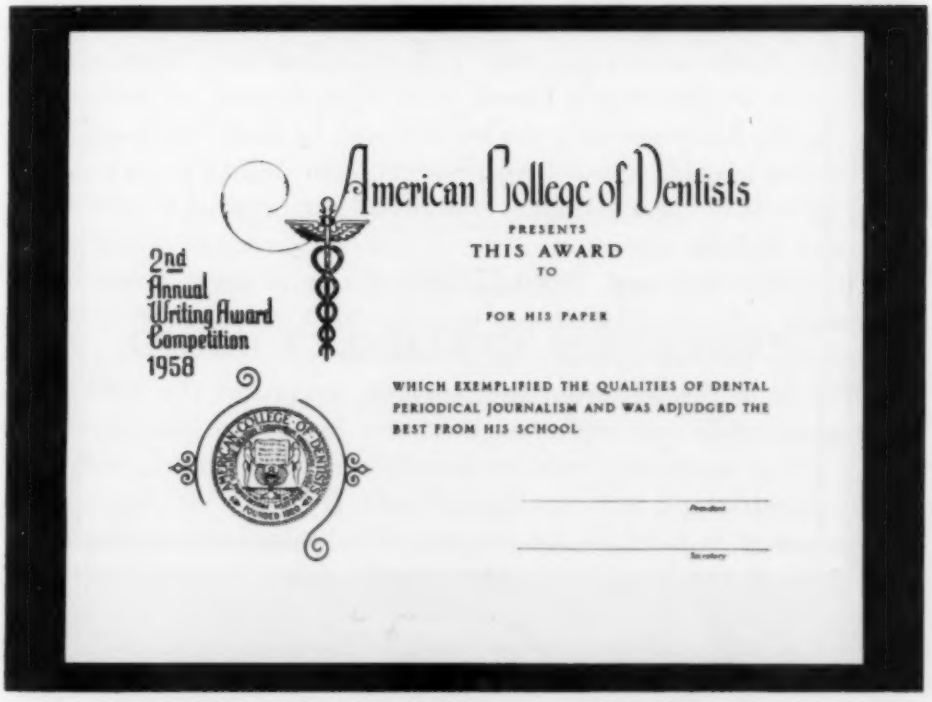

American College of Dentists
PRESENTS
THIS AWARD
TO
FOR HIS PAPER
2nd Annual Writing Award Competition 1958
WHICH EXEMPLIFIED THE QUALITIES OF DENTAL PERIODICAL JOURNALISM AND WAS ADJUDGED THE BEST FROM HIS SCHOOL

FIGURE 33. The School Winner Award Certificate.

Fund, which provides limited travel funds for persons doing research, whose work may be enhanced by visiting other research facilities.

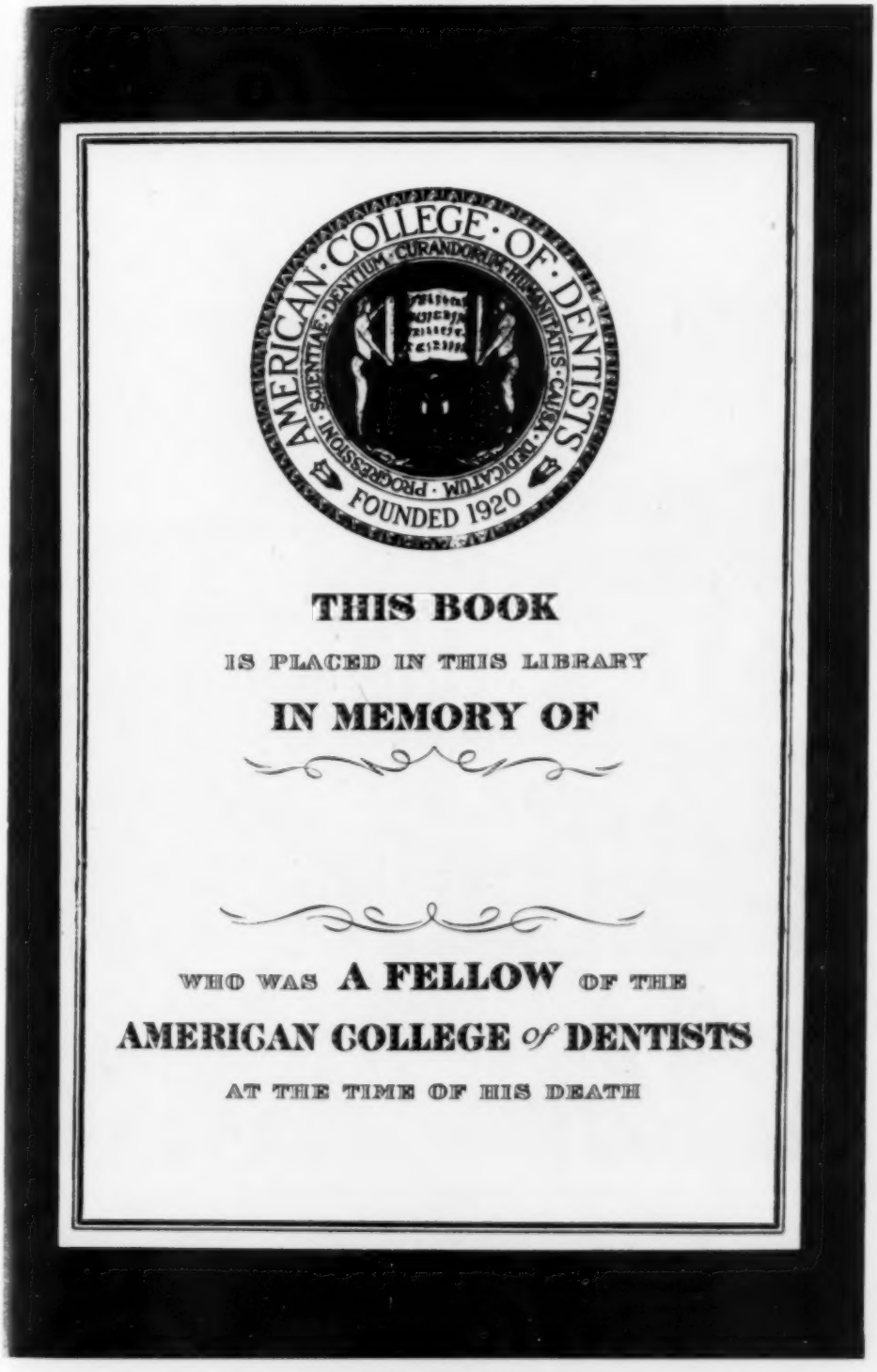
Another provision, the William John Gies Grant-in-Aid Fund, is designed to meet an unusual emergency in research laboratories. These latter two funds are under the auspices of the Committee on Research.

Special attention is called to the bookplate shown in Figure 34. This bookplate, in color, and properly inscribed with the name of the Fellow and the date of his death, is pasted on the inside cover of a book that is placed in the library of the deceased Fellow's Alma Mater at the time of his death. The book so placed is a fitting memorial in his memory and cherished by his family, his friends, and his Alma Mater.

On the north wall of the corridor being explained there is being developed a gallery of photographs of contributors to dental progress. Though only just begun, more than 60 photographs have been placed on this wall. Figure 35 shows a part of these. Proceeding farther along this corridor, we find on the left and straight ahead, some closet arrangements as well as overhead storage facilities.

Turning to the right, we enter a long corridor with shelf arrangements on both sides (Fig. 36). This is called the "Nominations Room," for in this area is stored everything dealing with nominations. In the flat boxes near the bottom will be found our supply of nomination blanks, censor's work sheets, consultant's report sheets, etc. The rows of speckled boxes contain all the original nominations that have had the attention of the Board of Censors over the years, alphabetically arranged. Figure 37 shows one of these boxes open, indicating individual envelopes used for each nomination and the accessibility offered by this type of box file.

Turning to the left from the corridor, you enter the workshop. This space, while only eight feet by twelve feet in size, contains most of the major machinery used in the office—postage meter, addressograph, mimeograph and copying machine (Figs. 38-39). Again, supplies are near at hand in the drawers or cabinets beneath the table surface, on the wall, or in the drawer and cabinet section on the opposite side. In an overhead space above the work bench is space for the storage of the shipping cases used for our annual meeting.


AMERICAN · COLLEGE · OF · DENTISTS
SCIENTIAE · DENTIUM · CURANDORUM · FIDEI · CAUSA · DEDICATUM · PROGRESSIONI
FOUNDED 1920
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IS PLACED IN THIS LIBRARY
IN MEMORY OF
WHO WAS A FELLOW OF THE
AMERICAN COLLEGE of DENTISTS
AT THE TIME OF HIS DEATH

FIGURE 34. The Bookplate.

FIGURE 35. Contributors to dental progress.

FIGURE 36. The Nominations Room.

FIGURE 37. The box file open.

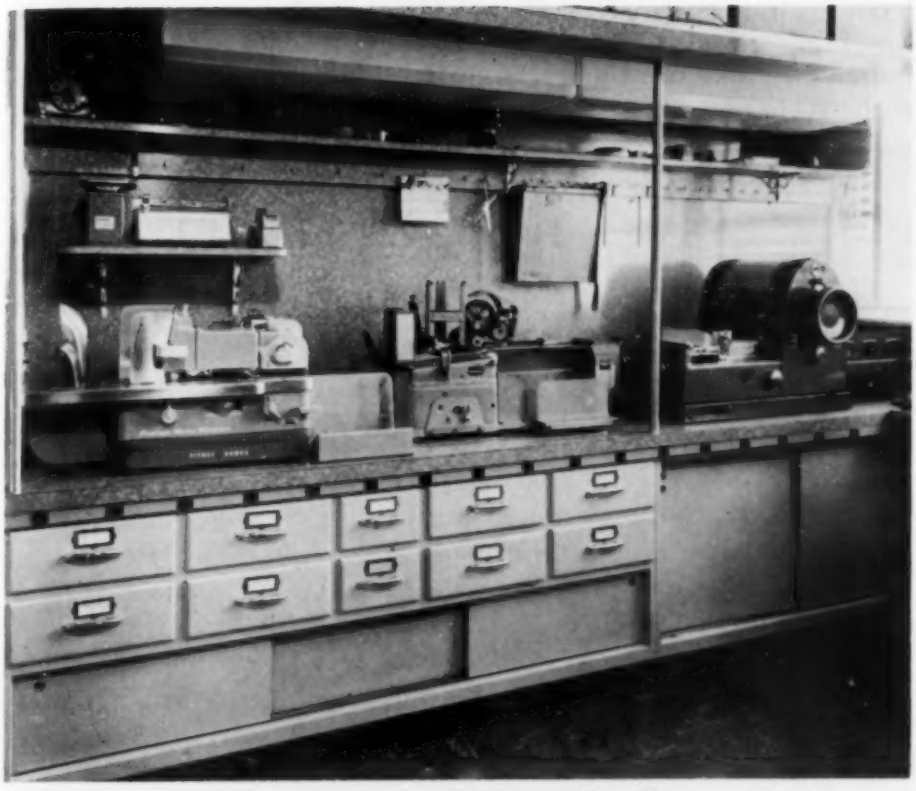

FIGURE 38. The workshop (south wall).

FIGURE 39. The workshop—west and north (right).

In a busy area like the workshop, table top space is always needed. Some such additional space is acquired by providing a drop-down shelf (Figs. 40-41). It will also be noted that use has been made of a shallow space on the wall behind this shelf space—a good place for small items—ink, trays, glasses, etc. A small wash basin is built in the corner to the right.

In the area to the left of the entrance to the room (not shown) space is provided for a refrigerator and a cabinet arrangement for the addressograph plates and other supplies. Figure 41 shows the cabinets closed and the shelf top down, providing additional table-top area.

The drawer and cabinet arrangement shown in Figure 39 forms the north wall of the workshop, and with the cabinet arrangement shown in Figure 15, left, form the dividing line between two areas.

Storage space is always at a premium and sometimes some things are difficult to get "out of sight." Card boards of various sizes seem to be one of these. Figure 42 shows an approach to this problem by placing a false back in two cabinets, thus providing card storage space above, as well as a space for card tables and other folding tables below.

Every well organized establishment should be prepared to meet emergency problems as they arise and even in the College many mechanical problems present themselves from time to time. Thus, it was felt that tools and supplies were desirable. Figure 43 shows how both these needs have been provided. Two shallow cabinets supply the needs—tools above and supplies in suspended jars below.

This, then, is the story of your headquarters in St. Louis. It was planned and developed to do the job the College had years ago chosen to do. Every effort has been made to not only provide for the present, but, as far as possible, to plan for the future by recording our experiences in a way that ready reference to them will provide a sound foundation for future planning.

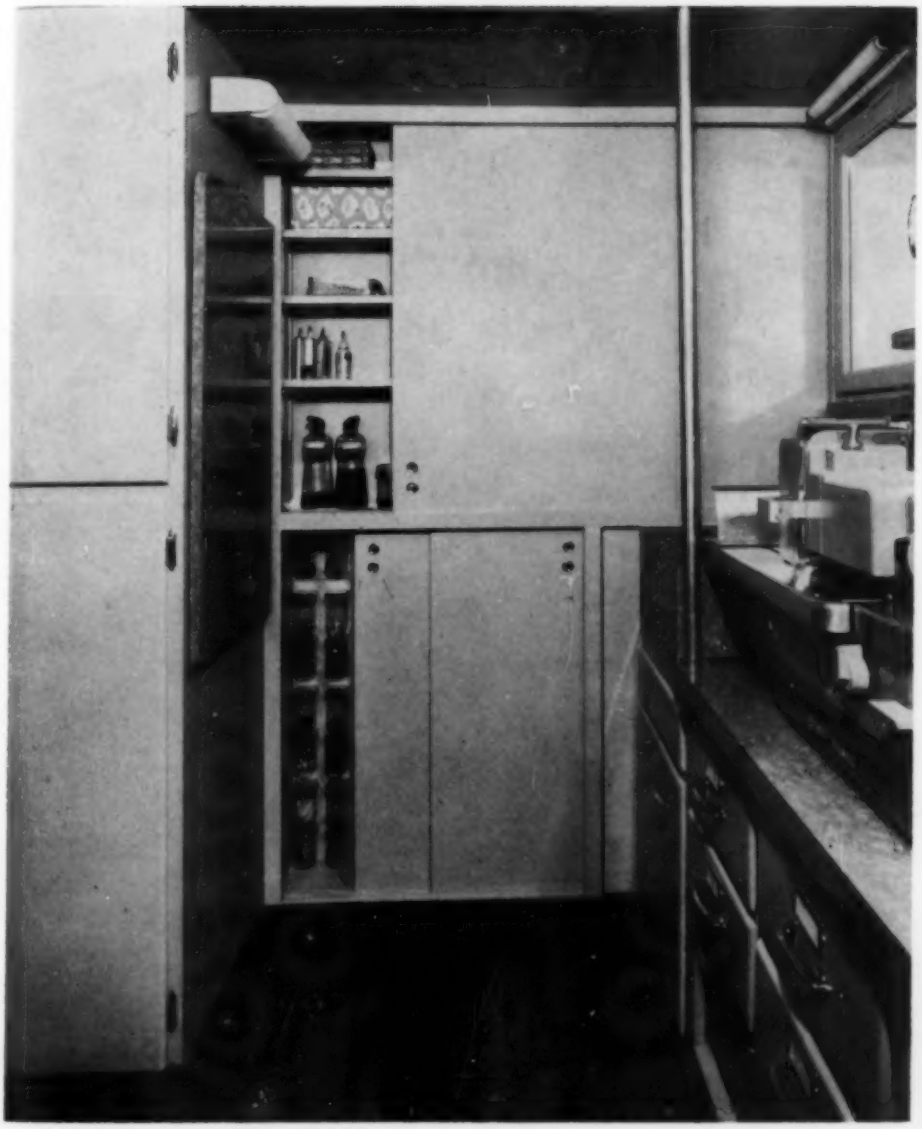

FIGURE 40. East end of workshop, cabinets, open, table-top up.

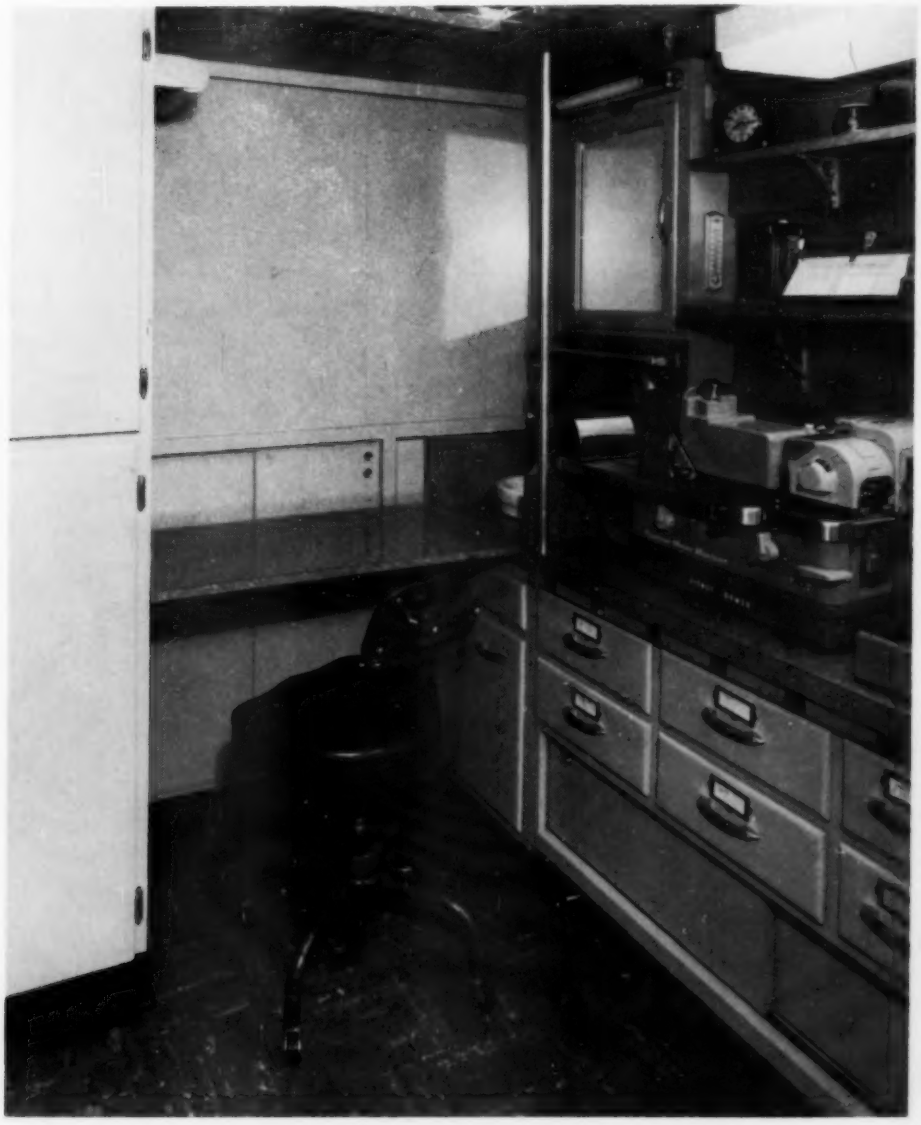

FIGURE 41. Same as Figure 40, with shelf down and cabinets closed.

FIGURE 42. Storage for tables and cardboard.

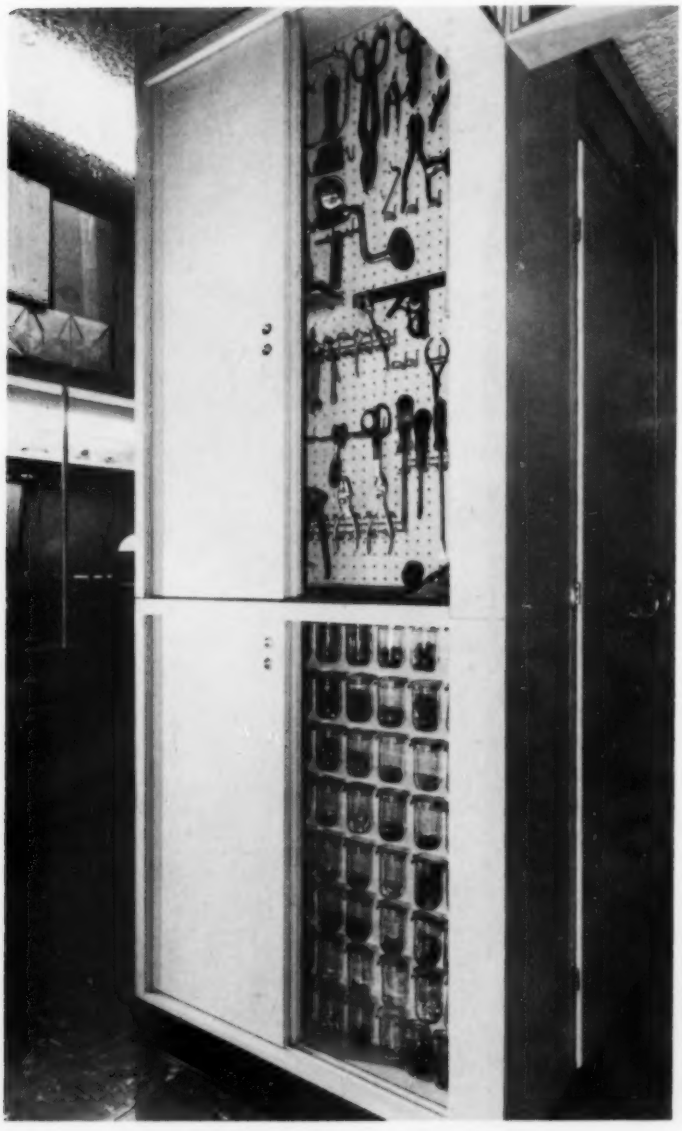

FIGURE 43. Tool chest and supplies.

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(September, 1961)

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CALENDAR OF MEETINGS

CONVOCATIONS

October 15, 1961, Philadelphia

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco

November 7, 1965, Las Vegas

There is an apparent discrepanc

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or the pagination is incorrect.

book is found in the collections.

A Dental Health Plan For the American People

A PANEL DISCUSSION PRESENTED AT
THE 1961 CONVOCATION
AMERICAN COLLEGE OF DENTISTS
PHILADELPHIA, OCTOBER 15, 1961

The Need, Demand, and Program for Providing Health Service for the American People

Harold Hillenbrand, D.D.S., B.S.D., Chicago, Ill.
Executive Secretary, American Dental Association

The Preventive Aspects of Oral Disease

Fluoridation

Rulon W. Openshaw, D.D.S., Los Angeles, Calif.
Chairman, Council on Dental Health, American Dental Association

Public Dental Health Education

Perry J. Sandell, B.S., M.Ed., Chicago, Ill.
Director, Bureau of Dental Health Education, American Dental Association

Preventive Efforts in Practice

Robert E. DeRevere, D.D.S., Philadelphia, Pa.
Associate Professor, Department of Operative Dentistry, School of Dentistry, University of Pennsylvania

Office Organization and Procedure

Organization for Increased Patient Care

Harry M. Klenda, D.D.S., B.S., Wichita, Kansas

Diagnosis and Treatment Planning

Jay H. Eshleman, D.D.S., Philadelphia, Pa.
Lecturer in Practice Management, Temple University, School of Dentistry

Dental Care for Various Population Groups

The Child: An Incremental Care Program

John M. Frankel, D.D.S., M.S., M.P.H., Chicago, Ill.
Regional Dental Consultant, Public Health Service

The Aged, Chronically Ill, Institutionalized, and Homebound

Albert H. Trithart, B.S., D.D.S., M.P.H., Nashville, Tenn.
Director, Division of Dental Health, Tennessee Department of Public Health

Dental Service for the Hospitalized
James R. Cameron, D.D.S., Philadelphia, Pa.
Professor of Oral Surgery, School of Dentistry, Temple University

Payment Methods for Dental Care

Pre-payment Plans
Carlton H. Williams, D.D.S., San Diego, Calif.
Chairman, Dental Care Committee, Southern California Dental Association

Responsibilities for Health Care as They Rest With the Profession and the Community
Carl L. Sebelius, D.D.S., M.P.H., Chicago, Ill.
Secretary, Council on Dental Health, American Dental Association

Need and Availability of Health Service Personnel

A Statistical Analysis of Dental Manpower
B. Duane Moen, B.S., M.A., Chicago, Ill.
Director, Bureau of Economic Research and Statistics, American Dental Association

Realism in Meeting the Personnel Problem
Reginald H. Sullens, B.M.E., Chicago, Ill.
Executive Secretary, American Association of Dental Schools

Recruitment of Health Service Personnel
J. Wallace Forbes, D.D.S., Philadelphia, Pa.
Instructor, Department of Operative Dentistry, Temple University, School of Dentistry

Dental Education

The Training of Health Service Personnel—Meeting the Cost of Such Training
Gerald D. Timmons, Ph.G., D.D.S., Philadelphia, Pa.
Dean, Temple University, School of Dentistry

Research Needs and Possibilities

Research in Dentistry
Seymour J. Kreshover, B.A., D.D.S., M.D., Ph.D., Washington, D. C.
Associate Director, National Institute of Dental Research

The Future Image of Dentistry
Moderator—Harold Hillenbrand, D.D.S.

The Need, Demand, and Program For Providing Health Service For the American People

HAROLD HILLENBRAND, D.D.S., B.S.D.

I have been asked to discuss formally "The Need, Demand, and Program for Providing Health Service for the American People" and it seems to me there are two approaches to this problem. The first is the technical approach, and this will be made by the distinguished panel of speakers. The second approach is in terms of our own professional contribution to the American way of life.

Let me oversimplify the first approach. The United States has the largest dental profession in the world. We believe—correctly, I think—that the United States dentistry has the highest level of professional service in the world. We believe—correctly, I think—that the United States has, if not the highest, one of the highest standards of living in the world. We believe that the United States considers health care as an essential part of this high living standard, and we believe that the people of the United States want and need dental care as a part of an essential health service.

Even if this were the best of all possible worlds—which it is not—I think we could all quickly come to agreement that many areas of need exist in the dental profession and in the services it renders to the people of this country. We know that the demand exists and that this is not static, for we have seen the demand for dental care rise to where now most Americans consider it a part of their way of life.

If, then, there is need and if there is an increasing demand, surely it is our task to develop a program in order to give better dental health care to more of the people.

The speakers on the panel will each place one or more small parts in the mosaic that they will reveal to you this morning and I think we should look briefly at some of the main features of this mosaic.

A recent study by the Bureau of Economic Research and Statistics of the American Dental Association revealed that 80 million, or 47 per cent, of the civilian population went to self-employed dentists in 1958. If only 47 per cent went to the dentist, it is obvious something needs to be done for the remaining 53 per cent.

Based on the gross income reported by self-employed dentists in the survey, it was estimated that consumers spend two billion dollars per year for dental care. This figure has increased consistently over the past decade, and surely this is evidence that there is a rising demand for dental care in the United States.

But what are some of the dimensions of this problem?

In 1958, according to the survey, there were 60 million extractions. Surely this is a greater tooth loss than the American nation need have.

The profession placed 200 million fillings in the same year. Surely this indicates that we are not effectively preventing and controlling dental caries.

There were only 200,000 fluoride treatments in 1958, revealing clearly that we are not using to the utmost one of our best preventive procedures.

There were 8,800,000 orthodontic sittings in 1958 and surely this number of sittings is not adequate to meet the needs of American youth.

There were 5,600,000 complete dentures produced in 1958 and surely this is confirmation of the fact that too many people are not keeping their natural dentition for all of their lives.

These are some of the pieces of the mosaic which I know that the members of the panel will fit into place during this session.

The second approach is to try to relate what the panel will do to the framework of American life. For those of you who have not read it, the recent Rockefeller Brothers' Report on *The Power of the Democratic Idea,* from which the following quotations are taken, would well be worth reading. In one of its eloquent passages the report says:

"In the past, Americans have responded well when confronted by immediate emergencies. The great question is whether a comfortable people can respond to an emergency that is chronic and one that requires a long effort and a sustained exercise of the will and the imagination."

Surely this is descriptive of the dental health problem in this country.

The report continues: "There is no alchemy that will make the problems of the contemporary world simpler than they are. Their solution in every social system depends on four essential conditions and on the quality of the men who occupy positions of leadership."

Surely we are addressing ourselves to the leaders of American dentistry this morning on the information and resources available to them, and surely this morning we will try to impart information to you on the circumstances in which they work and on the support they raise from their fellow citizens.

The report concludes: "At the greatest moment in the American past, Americans had an image before them of what free men, working together, could make of human life. The great question that the present generation of Americans needs to answer is whether the American democratic adventure can be continued and renewed, and whether American life can be lit by a sense of opportunities to be seized and great things to be done."

This morning, then, the panel will examine those things which need to be done, and dentists everywhere and society at large must decide if there is both the will and the capacity to do it.

I think this provides sufficient background against which the members of the panel will make their remarks on the need and the demand and the program for dental care.

We will now proceed to a detailed examination of the various aspects, and the first area which will be covered is "The Preventive Aspects of Oral Disease."

I take pleasure in introducing to you Dr. Rulon W. Openshaw of Los Angeles, the chairman of the Council on Dental Health of the American Dental Association, who will address you, hopefully in a brief way, on fluoridation.

Fluoridation

RULON W. OPENSHAW, D.D.S.

Newspapers and periodicals you read these days, newscasts you hear, television programs you see, discussions you have with your associates and your patients frequently touch on the health problems of the aging. Do you find yourself wishing, wearily, that the whole process of aging could be legislated right out of the American way of life? Or do you confine your wishes to the area of your expertness, and resolve to do your part to enlighten the public on the effectiveness of prevention and the folly of neglect which is demonstrated overwhelmingly in the accumulation of dental needs found among

the aging population today? Do you consider, then, how much that burden of neglect could be reduced in the future if all communities with public water supplies had fluoridation programs today?

The Commission on the Survey of Dentistry answered the last question with a recommendation that "All public agencies, with the assistance of voluntary associations and professional societies, make greater efforts to promote water fluoridation. . . ."[1] The White House Conference on Aging had even more specific answers. The Section on Health and Medical Care of that conference recommended "Fluoridation of water supplies as a long-range benefit for the dental health of the aging group of the future."[2] The Section on Research stated that "Since the beneficial effect of water fluoridation is a lifelong phenomenon, it is recommended that behavioral scientists focus attention upon the causes of resistance found in some communities toward institution of this public health measure. Preservation of natural teeth in later years is considered highly significant to the well-being of the aged."[3]

The latter recommendation of the White House Conference holds the clue to the problem facing the dental profession today in bringing the benefits of fluoridation to all communities: the word "resistance." There is no question as to the soundness of fluoridation; the question is one of achieving community acceptance.

Eleven years ago, the American Dental Association officially endorsed fluoridation as a safe and effective preventive measure.[4] Its action was duplicated by the entire scientific community. Little did the professions realize that their carefully considered actions in the interest of the health of the public would precipitate a political controversy that would split communities into war-like camps, set brother against brother, so to speak, and bring charges of "Poison!," "Murder!," "Communism!" Ridiculous though they are, these charges have been bewilderingly successful in denying the benefits of fluoridation to millions of persons in this country.

Where are these charges coming from? How can they be rebutted successfully?

Following the rejection of fluoridation in countless referendums last Fall, the Council on Dental Health of the American Dental Association decided that the time had come to find out why, and that the 12th National Dental Health Conference, held April 1961, was the place. Accordingly, a full day of the conference was set aside to

determine the answers to these questions, and a panel of experts as leaders from the fields of communications, law, and public health, as well as leaders from communities where the procedure had been attempted, was brought together to assist in the discussion. As a result of those deliberations, I say that the soundness of fluoridation should become the refrain of every campaign in every community in this nation that has a public water supply. By "every community," I include those with programs in operation—and intentionally so, for the forces of willful ignorance do not relent in their efforts even when fluoridation becomes a reality. And I use the word "campaign" deliberately, for, as it was so dramatically pointed out at the National Dental Health Conference, the small group of individuals who oppose the measure has "wrested [fluoridation] from the scientists and deposited [it] squarely in the middle of the political arena. . . . A thousand or ten thousand and more scientific experiments will not help. . . . By posing as guardians of the public health in this matter of fluoridation, opponents use it to arrogate to themselves the mantle of righteous protectors in other fields, including medical treatment, theory, diet control and political behavior."[5]

In summary, fluoridation is a sound preventive measure for reducing the incidence of dental decay. It has become a political issue and, realistically, its attainment must be approached on that basis. The first step will be the development of a manual to guide dental societies and other appropriate community agencies through the political arena.

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Moderator Hillenbrand: I think Dr. Openshaw has revealed one of the great areas in which things need to be done. Surely the

lack of progress in fluoridation, although it has been adopted perhaps more rapidly than any comparable health measure, still should not satisfy either the dental profession or the people of this country.

It is difficult to know whether the defeats of fluoridation in various cities throughout the country is a part of a trend toward rejecting the leadership of the professions (and this type of rejection does exist). It seems to me that one of the problems the profession has is to try to conquer this trend by better leadership and, as Dr. Openshaw so ably said, by campaigns of a political nature.

The next speaker in the area of "The Preventive Aspects of Oral Disease" was to have been Mr. Perry J. Sandell, the director of the Bureau of Dental Health Education of the American Dental Association. The State Officers' Conference is being held at the Sheraton Hotel this morning and Mr. Sandell had commitments there. But he has sent his able assistant, and I take pleasure in introducing to you Mr. Charles French, the assistant director of the Bureau of Dental Health Education, who will read the paper.

Public Dental Health Education

PERRY J. SANDELL, B.S., M.Ed.

The Commission on the Survey of Dentistry made one recommendation which relates specifically to public dental health education. It is as follows: "The Commission recommends that: (1) The American Dental Association expand the activities of its Bureau of Dental Health Education; the Public Health Service increase its dental health education activities directly and through provision of assistance to states; and that state and local public health agencies and dental societies initiate or expand public health education programs. (2) The number of trained health educators employed by official health agencies and dental societies be markedly increased, and that educational efforts be guided by their recommendations."

As a first step in implementing this recommendation, the Bureaus of Dental Health Education, Public Information, and Audiovisual

Service held a conference with representative dentists from throughout the country to determine their views on priorities for future programs of these bureaus.

Public dental health education programs fall into two areas—school dental health education and community dental health education. In these two areas there are educational activities that are appropriately the responsibility of the Association's bureaus and others that are the responsibility of constituent and component dental societies.

School Dental Health Education: The Bureau of Dental Health Education has produced and made available considerable material for use by schools in teaching dental health. Included in this material are teachers' guides, a manual for school dental health programs, a booklet on basic dental health facts, various pamphlets for pupils, posters, and films. There are available at the present time four teaching films, two for high school use and two for use in the elementary school.

The Bureau staff has also worked with textbook publishers and authors in reviewing materials on dental health and encouraging more dental health education material in textbooks.

The Bureau maintains liaison with a number of educational associations in the interest of keeping dental health in its appropriate perspective in the total educational program.

The only direct relationship the Bureau has to schools is through requests it receives for material. It is the local dental society which must establish a working relationship with the schools so that an adequate dental health education program can be established. The Bureau, through its printed material and through direct consultant service, can assist local dental societies in planning dental health programs with their schools.

State dental societies may develop liaison with appropriate officials of state departments of education so that joint plans can be developed for improving the dental health of school children.

What has been said about public schools applies equally to church supported schools.

Community Dental Health Education: When one thinks of community-wide education programs, the various mass media come to mind. Television, radio, and the press may be used if a program of education is planned in advance.The newspapers are eager for news stories related to health, particularly if they have a local flavor. Tele-

vision and radio stations are looking for interesting programs to meet their public service requirements.

It is the local society that must make contact with the media and have program material available. It is important that the local dental society survey its members to discover those who may have talent adaptable to television or radio and those who may have writing ability. It is equally important that the society maintain a roster of members who are skilled at speaking to lay groups of various types.

The society should make known to the many community organizations that it has speakers and programs which would be of interest and of educational value to any group.

The role of the various bureaus of the Association is to provide material suitable for use on radio or television, and material which can be adapted for use in the local press. Much of this material is available. It is important that the local society know what is available and plan in advance for its use. It is important that members of the society prepare themselves to appear on television, radio or before local groups. Presenting programs on any media can be disastrous if preliminary planning has not been done.

Moderator Hillenbrand: You have seen now two parts of the mosaic: fluoridation of public water supplies, and the use of dental health material for public health education. But even if both of these programs were fully operative there would still be need for one other piece of the mosaic. And that is, what the dentist does in his type of practice in the way of preventing and controlling dental disease. Our next speaker will discuss that topic: Dr. Robert E. DeRevere.

Preventive Efforts in Practice

ROBERT E. DeREVERE, D.D.S.

The general practice of dentistry as we know it today is, for the most part, one of correction of defects and treatment of diseases of the hard and soft tissues of the oral cavity. The preventive program develops after recognition of the need for a more thorough and com-

plete method of elimination of the ravages of the disease other than mere correction or restoration. This is a typical trend in the development of a health profession.

Planning a prevention program in practice depends on the practicality of the program, the patient's receptiveness to it and dentist's motivation and enthusiasm to provide it. So far, there have been restraints manifested in each of these conditions.

Ideally, the practice of dentistry should only encompass preventive measures such as the application of fluorides, occlusal equilibration, prophylaxis, and the like. However, the immediate goal of the profession is the control of dental disease which prevents the necessity of further and more radical treatment. Thus, control is prevention in a broad sense. It is this broad application in the practice of preventive dentistry which is presented here. As a matter of fact, the existence of completely effective and true preventive measures is nil in the office of the general dentist. Dentistry does not have office procedures such as inoculations and vaccinations which are true preventive measures.

As the concept of the practice of dentistry emerged from the limited area of treatment of decayed teeth and expanded in scope to include the total care of the patient's oral health, so then, must the scope of the practice of preventive dentistry be expanded to include procedures other than those related to the prevention of the initiation and development of carious lesions.

The complexity of the exciting and predisposing etiologic factors and conditions involved in the initiation and development of oral diseases is reflected in the multiplicity of the measures which can be instituted to reduce or prevent the manifestations of these oral diseases. These preventive measures (and here again, prevention is used in the broad sense) fall in three general categories: (1) those directly under the control and influence of the dentist, (2) those directly under the control of the patient, and (3) those under the control of both of these individuals acting as a group for the health of the public. This discussion is limited to those measures applicable to preventive efforts in practice. This then includes those under the direct control of the dentist and the extent to which he can influence the initiation and practice of those measures under the control of the patient and the public acting as a group.

A thorough examination of the teeth, supporting structures, and

intra- and extraoral soft tissues for the earliest detection of pathology is a precursor of any treatment preventive in nature. A more propitious time does not exist than during the examination to discuss with the patient those measures which may have prevented the condition detected or which will help to bring it under control. These measures should be based on the results of sound scientific and clinical investigations. Inherent in the physical examination is a careful history of the general health of the patient and the history of the existing diseases, if one is to arrive at a logical diagnosis and related therapy. Periodic routine roentgenographic examinations may reveal hidden conditions in need of intervention in order to prevent serious sequelae. Other roentgenographs and laboratory procedures are in order as the oral findings dictate in order to confirm or refute clinical impressions. These include blood and urine studies, palpation, percussion, transillumination, electric pulp test, and other special procedures. Just as a biopsy is a determining factor in the early detection of oral cancer, these other diagnostic aids and laboratory procedures are important adjuncts in pinpointing a diagnosis. Early diagnosis and early treatment is preventive in nature.

Limitation of time for this discussion prevents other than the mentioning of the many and varied procedures available to the dentist in his everyday practice. Motivating patients to practice better home care for the benefit of their oral health is a prime responsibility which, unfortunately, is often overlooked, because of the lack of material financial return to the practitioner. This includes oral hygiene, dietary habits, good nutrition, supportive therapy, and the periodic seeking of dental care.

The benefits derived from the fluoridation of public water supplies are not the result of the practice of preventive dentistry in the offices; but the patient's dental-education potential in the dental office on this measure is an influential media which has been grossly neglected. The dental profession and the Public Health Services are beginning to realize that the fluoride program is being defeated in the dental office through neglect of dissemination of scientific information to the patient. The topical application of fluorides to the teeth of children and caries susceptible adults should be synonymous with the prophylaxis-examination-roentgenographic visit. A technic permitting the application of fluoride following the prophylaxis at each recall visit is realistic and effective.

The treatment of a tooth by repair of a carious lesion in itself is preventive. However, the treatment must be the best possible service which the profession is capable of rendering. If the operator knows his therapy does not measure up to the highest standards, then it behooves him to seek refresher courses in order to provide the most recent developments in the application of existing procedures for his patients. By not too much of a stretch of the imagination, continuing education is directly applicable to the practice of preventive dentistry.

It would be interesting to know how much operative dentistry entails the replacement of restorations because of factors other than recurrent caries, such as ditched or fractured marginal areas, overhangs, poor contact areas, poor contour, occlusal trauma, inadequate functional relationship of the restoration, food-traps, etc. How many artificial replacements of teeth are remade because of some defect in the design or construction of the original? How many teeth are lost because of inadequate concern for the pulp and surrounding supporting structures of the teeth during restorative procedures? If manpower is needed and prevention is a partial solution, the practice of high quality restorative dentistry should be a major contribution to reducing the need for dental care.

An office concerned with prevention and control of dental disease will have an efficient and effective recall system. The prevention of dental disease reflected in early detection and diagnosis depends on regular periodic visits to the dental office. This cannot be the patient's responsibility alone.

The practice of preventive dentistry in current times does require an effort—an all-out effort. It is easy to fall into the rut of caring for the physical needs of the patient as demanded by the patient. It is the responsibility of the practitioner to initiate every practical preventive measure available to him. It is his responsibility to present this to the patient in such a manner that the patient is receptive to the recommended procedures. All this depends on the enthusiasm of the practitioner to attain the ideal goal of dentistry. Only then will the rewards of a conscientious dentist be realized.

Moderator Hillenbrand: Walking up from that great big red chair to the podium here reminds me of Casey Stengel coming

out from the bench to change pitchers. It happens that we are going to do just that because the next speaker, Dr. Harry M. Klenda, of Wichita, Kansas, is not able to be with us this morning and I am taking the liberty of substituting someone known to all members of the College, Dr. Henry Swanson, who will read the paper.

Organization for Increased Patient Care

HARRY M. KLENDA, D.D.S., B.S.

The profession is always on the alert and increasingly involved in "product development." This speaks for the high quality dentistry enjoyed today. Another progressive step is a trend toward simplified work methods, conservation of the dentist, and increased "output index" on the part of dentists we now have and hope to graduate.

During the course of a work year the dentist has a certain number of productive hours. It is estimated that this amounts to about 1500 hours. A productive hour is a "unit of time for which a doctor gets a fee." This is a definition developed at the Michigan Practice Administration Workshop held in the year 1953. Therefore, for office organization principles, one must study carefully the appointment book.

"What is an appointment book?" An appointment book is a record keeper containing the arrangement of appointments for patients in the dental office. An appointment is a period of time allotted to a patient for the purpose of doing work. Basically, the appointment book controls the dentist's time, which is his capital; his knowledge and skills are his commodity. This knowledge and these skills he hopes to dispense efficiently, because there is only a limited time in which to do work. Every hour that is lost through mismanagement and frustration is lost forever and, in a sense, takes away one hour from the precious capital. The dentist should analyze just how much time is lost through inefficient routine, doing work that should be delegated, such as change of patients, preparation and sterilization of

armamentarium, tray set-ups, answering telephone, sending out statements, making appointments; these chores, completely enumerated, could go on and on. This totals to a staggering amount of lost productive potential that can be otherwise devoted to broadening of services to care for more of the public needs. Obviously the farsighted dentist must efficiently organize auxiliary personnel and should also include duplicate or multiple operating rooms. Objectively this means that the dentist must be organized within himself. Through the exercise of his imagination, useful application of sound office practice administration principles must be applied to every angle of work. A general practitioner performs a large variety of dental services requiring variable amounts of time, depending on the services rendered, with known conditions under which each is performed.

This basically must be known to the appointment book. Let me cite this example. If a person is scheduled for an extraction, the appointment book should know that about five to ten minutes of actual time need be drawn from the dentist's precious capital to perform this particular operation, even though the appointment actually requires thirty minutes of the patient's presence in the dental chair. The appointment book therefore contains the dentist's time, but in the overall use of auxiliary personnel and multiple operatories, it represents many more man hours than indicated on it.

The point I wish to make clear is that a great percentage of the time needed and the overall services required can be delegated. This obviates any debate as to whether one should have duplicate or multiple operating rooms. I do not like to think of a multiple chair office as one that may be used for emergencies, X-rays, or other limited dental operative work. I think of a multiple office arrangement as one where a practice is managed in each operating room. Hence, each operating room must be completely equipped with basic as well as hand and other armamentarium.

Dental assistants must be trained to handle all details except those that require the scientific, digital, and operative skills possessed by the dentist.

Toward this end the dentist must diagnose, recommend, plan, and record completely the treatments needed for each case. Organizationally this develops a pattern for assistants to use as a guide in preparatory as well as operatory work which they need to know about in advance.

Dental operations may be performed in many different ways. Experience has already convinced a few professional men that we are most likely to conduct our own operations efficiently if we think of them always in terms of delegating all motions not requiring the scientific digital and operative skills of the dentist.

As you might suspect, this ability on the part of a practitioner is hard to come by but, in these times looking toward the projected population explosion, practitioners we now have and hope to graduate can become more efficient and handle more people.

In this short discussion it then appears we must place some emphasis on organization that composes physical and human factors. The foundation for increased production to meet the demands of the public for more dental care will require an aggregate of the dentist's technical operative know-how, his resourcefulness in training and the acquiring of trained personnel communication and utilization.

In conclusion: Collectively, much time capital on the part of the dentists we now have is being wasted. This potential must be recovered and fully utilized, which in turn will meet the demand made on the profession today. The profession has a large volume of production potential. Individually, practitioners are not too clear on this point. Those that are, have a meaningful as well as a sound grasp of their own practice potential, with increased production, qualitatively and quantitatively.

Moderator Hillenbrand: The second paper in this series on "Office Organization and Procedure" will be given by the busiest man in Philadelphia. For purposes of the Annual Session, Philadelphia is beginning to include (on the basis of hotel rooms) both Atlantic City and Wilmington, Delaware. So if any of you are unhappy about the size of your rooms at the Sheraton and wish to move around a little bit, simply talk to the next speaker. I can tell you in advance his answer is that nothing at all can be done.

I am talking about Dr. Jay H. Eshleman, who has addressed this group earlier this morning. He is General Chairman of the Local Arrangements Committee for the American Dental Association meeting. He speaks now as an educator.

Diagnosis and Treatment Planning

JAY H. ESHLEMAN, D.D.S.

Modern concepts of diagnosis and treatment planning place strong emphasis upon dental health education, prevention, and early detection of dental disease.

The care which the oral cavity and the associated parts receive is vitally related to the total health of the individual. This is an accepted fact, a philosophy now embraced by those engaged in dental education, research, public health, and to a more limited degree to those engaged in dental practice.

A review of the literature reveals at once the sharp contrast with concepts which were embraced a generation ago, when teaching and practice were more limited in scope, and somewhat confining in nature.

There is little doubt the public image of dentistry today has been created by what the profession accomplished in the past, rather than what we are doing at present, or planning for the future. Indeed, there is strong evidence to support the theory that many men now engaged in private practice should be awakened to the new concepts of diagnosis and treatment planning.

It is rather alarming to learn from the recent *Survey of Dentistry* the low priority given to preventive measures in private practice. After excluding from the sample all specialists except pedodontists and periodontists, the National Opinion Research Center rated practices as follows: 20 per cent highly preventive, 29 per cent moderately preventive, 25 per cent somewhat preventive, 26 per cent negligibly preventive.

A ray of hope does exist however, for the National Opinion Research Center also reports a higher level of interest in the principles of preventive dentistry by the recently graduated dentists than among older practitioners. For this accomplishment the dental schools should receive a major share of credit.

States which have achieved a high level of accomplishment in the area of prevention and dental health education have demonstrated the effectiveness of the team approach, using all public agencies,

volunteer associations, and professional societies to reach dental health objectives.

Regardless of what approach is used, there is no substitute for the individual practitioner, who can and should be the most effective good will ambassador for dentistry in the world today. The human relations atmosphere or climate which he creates and maintains in his personal contact with patients, both within the office and beyond, determines in large measure the success or failure of all diagnosis and treatment planning.

The mass application of a treatment plan rules out the opportunity to develop a personalized approach which is the key to any program designed to develop confidence, the precursor to acceptance. What is accomplished by talking to a patient? Obviously to learn something about symptoms, subjective and objective, their nature and history.

True, but though this approach is used by the majority of men today, it fails to take advantage of the most important aspect of patient-dentist relationship, for it focuses attention on effect with too little thought about cause. Dental defects do not just happen. There is usually a cause.

Accordingly, the aim of talking with a patient is to find out not only about the immediate symptoms, but something about himself personally, his strengths and weaknesses, his experiences through life not only as related to dental care, but experiences in general, and his reactions to them. Learning about these things will help us better understand not only the approach to the patient, but more important his behavior once we have reached him.

Lasting impressions are formed during the initial interview and the wise practitioner will:

Take time to absorb and reflect.
Permit no interruptions.
Eliminate noisy competition.
Speak on patient's level.
Be friendly, relaxed and smile.
Avoid quizzing or grilling.
Try to detect signs of distress, anxiety, pain, sadness, fear, anger, depression and cut your cloth to fit the pattern.
Talk little but listen much.
Avoid writing if possible.
Appear unhurried.
Be interested.

Be charitable.
Be tolerant.
Be truthful.
Be humble.
Be patient.

Proper attitudes precede proper treatment, and he who projects himself into the patient's position will most likely be faced with most of these questions, and be prepared to supply a suitable answer.

Does he know how frightened I am?
Does he know why I came, what I want?
Does he know what I need?
Will he be gentle?
What is he planning to do?
Why?
How?
When?
How much will it cost?
How will it look?
How can I pay?
How long will it last?

By anticipating these questions in advance, most of which will never be expressed by the patient during the initial interview, one can develop an approach designed to clear the human relations climate, removing the haze of doubt, fear, anxiety, distrust, and similar hazards which impede an effective patient-dentist relationship, an essential prerequisite to sound diagnosis and effective treatment planning.

In this atmosphere of understanding and mutual confidence, the diagnosis of the patient's problems can be discussed and the treatment outlined. Every patient is entitled to know the conditions and the plans for treatment.

Again, in this atmosphere of understanding, the cost elements of the services become a natural point for discussion, and acceptable payment methods can be agreed upon. Open discussion of this kind paves the way for cooperative efforts that will have very favorable influences on a a broad continuing health service for the patient and a satisfying practice for the doctor.

Moderator Hillenbrand: We have just heard discussion in two areas of this panel, and we come to a third and very important

one. This is "Dental Care for Various Population Groups," including the child, the aged, the chronically ill, and the hospitalized. The first speaker is John M. Frankel.

The Child: An Incremental Care Program

JOHN M. FRANKEL, D.D.S., M.S., M.P.H.

One of the most challenging recommendations of the Report of the Commission on the Survey of Dentistry is incremental dental care for the entire child population of the nation.[1] What is incremental dental care? Simply stated it is a system for meeting the dental needs of a population as they occur. When such a system begins with the treatment of an individual's first dental decay and continues with treatment of successive new lesions as they appear, there never is any large accumulation of unmet needs. To date, experience with incremental dental care has been in public programs and for school populations. The programs began with five or six year old children in kindergarten or first grade, and it was necessary to treat the accumulated needs of these children before entering upon the incremental program itself.

In the example shown (Fig. 1), the first round of treatment is at age three, caring for the first increment of dental decay in the primary dentition during the hypothetical year 1961. A child in this group is in cohort A and remains in this group as long as he is in the program. His new increment of dental caries is treated during the treatment rounds of each successive year. Each year a new cohort of the youngest age group is added until the desired age spectrum is covered in the program. The children in cohorts D through K are not yet born, but they will take their places in the program when they reach age three. The child in cohort A first treated at age three in 1961 will have had eleven treatment rounds by the time his cohort has reached age thirteen in 1971.

The incremental approach permits beginning on a small scale, with gradual expansion of the program's size. Also, it is possible to

anticipate administratively the manpower and costs requirements in advance of budget deadlines. When the desired age spectrum has been covered, these manpower and cost requirements become relatively stable.

The Richmond and Woonsocket studies[2] did not adhere to successive age groups rigidly. Children of a wide age-range were treated at the outset in order to eliminate accumulated neglect. In Richmond,[3] where approximately 5,000 children, age six to sixteen, had an average number of 5.8 carious teeth per child, one dentist spent an average of 2.88 man hours per child caring for 508 children in the first treatment series. At the time of the fourth and final treatment series, the children had an average of only 1.32 carious teeth, the dentist needed to spend only .75 man hours per child, and he

PATTERN OF INCREMENTAL DENTAL CARE

Year of Program	*Age of Child*											
	3	4	5	6	7	8	9	10	11	12	13	ETC.
1 (1961)	A											
2 (1962)	B	A										
3 (1963)	C	B	A									
4 (1964)	D	C	B	A								
5 (1965)	E	D	C	B	A							
6 (1966)	F	E	D	C	B	A						
7 (1967)	G	F	E	D	C	B	A					
8 (1968)	H	G	F	E	D	C	B	A				
9 (1969)	I	H	G	F	E	D	C	B	A			
10 (1970)	J	I	H	G	F	E	D	C	B	A		
11 (1971)	K	J	I	H	G	F	E	D	C	B	A	
Etc.												

FIGURE 1.

was able to care for 1,343 children. During each of the four treatment series there were new children entering the program who had accumulated dental needs which required treatment and other children whose backlog of need had not been completely eliminated. Thus, even in the fourth series the dental man hour requirements were probably higher than in a program limited to incremental care. Brazilian experience[4] adhering to successive age groups more rigidly and increasing the age spectrum more slowly, produced similar results.

Certain aspects of the incremental principle are inherent in well run private practices. For example, regular recall programs are designed to treat the private patient's incremental needs just as successive treatment series do for patients in public programs. In fact, the use of the incremental principle in private practice has definite advantages over its application in public programs. Private practice can more easily include the care of preschool children instead of waiting until age five or six as is done in school based programs. Furthermore, private practice has more ready access to parents than does a public program, and parent indoctrination is a necessity to the successful operation of any children's program, public or private.

One of the established values of a public dental program on an incremental basis is the opportunity to measure the impact of the program on the oral health of the population served. When the incremental principle is applied to private practice, the practicing dentist also should be able to view the same kind of progress for his patient roster. This can be done by dividing his patients into identifiable groups and measuring the accomplishments of each group. The groups used might be all new patients, regardless of age, admitted each month or calendar quarter or each new family group added to the practice. A dental service corporation in its contract with a labor welfare fund might consider new employees added to the program each month or each quarter as a group for program purposes. Similarly, in a hospital or institutional setting all new admissions during a month or quarter could be considered a group.

Private dental practice represents the greatest resource available to meet the challenge of the *Survey of Dentistry* recommendation on incremental dental care, and we must exploit the potential of private practice to the maximum. Nevertheless, many communities may prefer public programs or require such programs to supplement

the efforts of practicing dentists, especially where a substantial portion of the population cannot afford private dental care.

Whether in public programs or private practice, the application of the incremental principle permits an orderly system of accomplishing the main objective: regular and complete dental care for as large a segment of the nation's population as is possible. By coupling the increment principle with maximum use of preventive measures, effective patient education, and modern practice methods including optimum use of auxiliary personnel, it should be possible to achieve the fullest use of the country's dental manpower for the fulfillment of dentistry's professional obligation.

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Moderator Hillenbrand: I think we will continue to hear a great deal about the incremental care program in the predictable future. For some reasons which are not quite clear to me, the incremental program is the subject of debate and controversy in some areas. I hope that after the debate and controversy are over that we will have a better result than the farmer who attempted to cross two roosters. His end result was two cross roosters.

In the past few years the nation has concentrated its attention on one area of our health problem, the health care for the aged. This, as you know, is now under national debate and the dental profession has an important stake in its outcome. Dr. Albert H. Trithart will discuss this topic.

Dental Care for the Aged, Chronically Ill, Institutionalized, And Homebound

ALBERT H. TRITHART, B.S., D.D.S., M.P.H.

Dental health problems of the aged, chronically ill, institutionalized, and homebound are receiving increased attention these days. Several factors account for this increased interest. These people constitute a greater segment of our society than ever before, and this segment is growing and will continue to grow in proportion to our total population.

The National Health Survey reports that seventeen million people, or 9 per cent of our nation's people, are sixty-five years of age or older. The Survey also reports that 10 per cent of our population has one or more chronic conditions with some degree of activity limitation.

Although the conditions of old age and chronic illness are not synonymous there is a clear relationship between the two. It is reported that chronic illness is thirteen times as prevalent in people sixty-five years of age and older than persons under forty-five years of age. The health picture becomes worse with advancing years and more and more of these people become homebound or institutionalized. Among those seventy-five years of age or older almost one-third are homebound or institutionalized and need help in getting around.

Since there is substantial overlapping of the aged, chronically ill, homebound, and institutionalized in our society, for purposes of this brief discussion they will be considered together.

How much medical and, more particularly, dental care do these people receive? The National Health Survey reports that people age sixty-five and over average 6.5 physician visits per year. Those with partial physical limitation averaged 11.4 visits per year and those with major limitations 18.9 visits. It is not particularly surprising that the rate of physician visits per year is substantially higher for the aged and chronically ill than for younger, healthier age

groups. A similar situation does not prevail in regard to dental care. People sixty-five years of age and older average only 0.8 dental visits per year, which is substantially less than 1.4 visits for younger age groups of our population. Apparently, as people get older they seek more and more medical care and less and less dental care. This paradoxical situation has been attributed by some to the fact that many of these people are edentulous and no longer need dental treatment. Being endentulous may provide a partial explanation for the limited amount of dental care these people receive, but I do not think it is an adequate explanation. In fact, an adequate explanation is not readily obtainable, and that is why we need a great deal more information about the dental health of these people. We also need much more information on the availability of dental care for these people.

A wealth of information is being gathered in studies around the nation to show the dental health status, levels of dental care, and treatability factors associated with providing dental treatment for these people. Special treatment facilities and equipment are being developed. Dental manpower needs and treatment cost are being studied. Dentists and auxiliary personnel are being trained to train others in some of the special techniques and methods of treating bedfast patients. Already much information is available, and more will be forthcoming.

Most of the pilot studies and demonstration programs that have been done at the state and national levels have been in metropolitan areas, such as New York, Chicago, and Kansas City. Information obtained in these studies and demonstrations will provide the basis for sound, well thought out programs in small towns, as well as large cities. The data obtained from these studies will only be as valuable as they are used to plan sound dental health programs for the aged and chronically ill everywhere.

One of the major responsibilities of organized dentistry is to see that this valuable information which has been so painstakingly gathered is put to practical application. The American College of Dentists, and more specifically the individual Fellows of the College, are in a position to provide the leadership needed to utilize this information at the local level. Usually those agencies which are concerned with and responsible for the health and welfare of the aged

and chronically ill will welcome assistance and counsel from the dental profession. A well informed local dentist can provide much guidance for local programs which can be obtained from no other source.

Little has been said or written about dental health education for the aged and chronically ill. The National Health Survey reported that more than half of those persons sixty-five years of age and older thought the loss of teeth was inevitable, regardless of the care taken of them. This attitude is in contrast to that of young people who think natural teeth, with adequate care, should last for a lifetime. We seek to foster a favorable attitude toward dental health among our young people by all the educational methods at our command. However, almost nothing has been done in the area of dental health education among the aged and chronically ill, or the persons who care for these people. Admittedly, the task would not be an easy one, but experience with other population groups has shown the value of supplementing dental treatment with dental health education. Dental treatment for the individual, or a community of individuals, can always provide a sound springboard for dental health education.

In this brief discussion, I would not suggest what methods of dental health education should be used with the aged and chronically ill. This area needs exploration by health educators, social scientists, as well as dentists. I think we need to know much more about the attitudes of these people toward dental health and dental care, and what motivates them to want and seek dental treatment. We already have a good deal of information on what their dental needs are and what is required in time and money to treat these needs. But what do *they* think of their own dental health status, and what do *they* or the *people* who care for them, think they need in the way of dental treatment? Obtaining this information should provide a challenge to those who want to explore the whole problem.

Luther L. Terry, Surgeon General of the Public Health Service, in a recent address, stated that nursing homes and home care are fields virtually untilled by the dental profession, and are the two most profitable locations for the improvement of services to these large groups of people. He further expressed the hope that practical proposals for the delivery of dental services to the chronically ill and aged will be forthcoming.

Until the presently proven methods of prevention catch up with the aging and chronically ill segment of our society, their dental health problems will continue to be of substantial proportions. Perhaps in thirty or forty years, when most of a nation of people will have had the benefits of fluoridation for a lifetime, the dental health problems of the aged and chronically ill will be greatly reduced. Until that time comes, it is a moral and professional responsibility of organized dentistry to provide active guidance in the development and operation of dental health programs for the aged and chronically ill.

If dentistry is an essential health service, it is a health service for the aged and chronically ill as well as everyone else, and includes dental health education as well as treatment.

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Moderator Hillenbrand: There is another area of our population which requires greater attention from the members of the dental profession in their planning. This is the hospitalized patient. We have a competent expert to discuss this problem with you who I assume is known to everyone in this room, Dr. James R. Cameron.

Dental Service for the Hospitalized

JAMES R. CAMERON, D.D.S.

The scope of dental service in a hospital will be governed largely by the type of hospital, its location, and its patient load.

A general hospital whose patient load leans more toward surgical than medical cases, will, naturally, have a more rapid turnover of patients and fewer hospital days than would a hospital whose services are mostly medical. The dental service in such a hospital might serve the care of patients best when limited to diagnosis and oral surgery procedures.

In hospitals where the patients on the medical service outnumber those admitted for surgery, bed occupancy will be more lengthy and dental problems may arise requiring attention from the dental staff on a wider scope than that covered by diagnosis and surgery alone. In such hospitals, the dental staff should be so organized to cover the wider scope of dental practice and that this service be rendered by dentists best qualified in each particular branch of dentistry. Broad dental coverage in the care of aged and handicapped patients, who are institutionalized, will require a staff of capable, interested, and sympathetic general practitioners of dentistry.

Most teaching hospitals offer residency training programs. In the rapidly expanding field of oral surgery, it is advisable that applicants for an oral surgery residency of two or more years complete, prior to their hospital residency, a year of basic science study on the graduate level. This year of basic study directed to the clinical practice of oral surgery offers the student a firm foundation for development in practice. To mention but one study: that of training in physical diagnosis. This will afford the resident an excellent background for the necessary evaluation of oral surgery patients.

An oral surgery service in a large hospital will, of necessity, be both an in-patient and out-patient service. The chief of the service, and as many associates as possible, should be Board qualified and devote time by way of daily visits to the hospital in order to adequately supervise the training and guidance of the residents in their care of patients on the service.

The oral surgery out-patient clinic will afford community service

and be a feeder for the in-patient oral surgery service, as is the accident ward of the hospital. In order to function more efficiently, an out-patient clinic should have stated hours of operating, and the attending staff be punctual and regular in its attendance. The resident staff should be assigned certain hours in the out-patient clinic as part of its overall training. This should be under the supervision of the attending members of the dental staff who need not necessarily be Board certified, but should have some formal training in the care of ambulatory oral surgery patients. Board certification in the area of orthodontia or periodontics may be an advantage, if such services are rendered on an out-patient basis.

The chief of the oral surgery service, and the chief of the department of dentistry, if such exists, should be eligible for appointment to the executive committee of the medical staff and be willing to serve on other committees. All members of the dental staff, both in-patient and out-patient, should be considered as part of the general medical staff and observe the same disciplines as do other specialty services in the hospital family. Dentistry, in whole or in part, should be an integral part of every well conducted hospital caring for the sick and injured.

In summary, the modern hospital is an institution that exists for the prevention of disease on the broadest possible scope, as well as for rendering curative therapy in all branches of the healing arts. The hospital is, of necessity, a major asset in all communities and to meet present requirements for a full coverage of health service, dentistry like that of medicine, must assume its full responsibility as an important part of the health team.

As stated earlier in this paper, the scope of hospital dental service will depend on the type of institution being served. Operative dentistry in the various branches will occupy an important role in a children's hospital, whereas prosthetics will be the major part of dental service in hospitals and/or convalescent homes caring for the aged and chronically ill. Hospitals for nervous and mentally sick patients should, likewise, have full coverage of all phases of dental practice.

As the progress of dental education and practice continues to embrace a wider concept of rendering a health service to the community, dentists must be willing to cooperate to the fullest extent with other health agencies in the interest of patients.

Moderator Hillenbrand: I am sure you will agree that Dr. Cameron's boss, Dean Timmons, will approve of Dr. Cameron's paper. Dr. Cameron later in the program will have an opportunity to be critical of Dr. Timmons when the dean rises to his little feet.

Having considered the dental care available to the American people, we come to the critical problem of paying for it. This is the discussion of "Payment Methods for Dental Care," particularly in the area of pre-payment plans. The speaker is Dr. Carlton H. Williams of San Diego.

Pre-Payment Dental Care Plans

CARLTON H. WILLIAMS, D.D.S.

The appearance on the American scene of pre-paid dental programs should certainly be met by the profession with a feeling of confidence, provided the proper foundation has been laid for the programs. Pre-payment is just another form, or method, for paying the cost of repairing dental destruction, and since the dental profession has effectively convinced the public that dental care is an important and necessary portion of the total health picture, it is only natural for the general public to look for any means whatsoever to pre-pay this as they have other medical and hospital needs. In the past we have used the usual concept of the patient or his family paying for the work upon completion; then a few years ago, there appeared the post-payment plan wherein a third party, usually a bank, bought the account and the patient paid the third party. These post-payment plans have spread rapidly and are used across the breadth of our land.

Most pre-paid programs are the result of fringe benefits of employment, determined at the bargaining table, where management and labor have agreed that dental care is the next necessary benefit for employees. These types of union sponsored—employer financed programs are bound to grow, and it is up to the dental profession to see that the principles that have led our profession to the pinnacle

of perfection are not destroyed, lest we see a degrading influence creep in and a general retrogression of our profession result.

The foundation upon which the programs should be built, or the yardstick by which they can be measured is extremely important and the following points are essential to preserve our independence, and our independence is imperative.

Open Panel Programs Are Necessary

The open panel is necessary because in the closed panel operation the dentist loses his right to accept or refuse a patient, the patient loses the same right and it puts undue duress on the patient because if the patient refuses to go to the closed panel he loses all of the benefits for which he has paid in any pre-paid program. Further, the closed panel leaves us very vulnerable to non-professional domination. The closed group has only one patient, and if any one of us should have only one patient, that patient's desire would be a dictated decree, and independence would surely be lost.

Payment for Services Not on a Fixed Schedule of Fees

The flexible fee approach is absolutely imperative if we are to remain free to use professional judgment in professional decisions. The average American is not average in any respect. Our patients demand different and individual treatment, and cannot be treated as a commodity, or a can of groceries. Private practice is a complicated business; it embraces men of varying skill, varying clinical experience, varying levels of education beyond graduation, varying economic areas and communities, and varying individual responses. In order to allow for these variables, some flexibility must be preserved in the fee. This great profession was developed under a free system wherein each doctor could seek his own level of education, his own level of training, and his own standard of living. We must preserve the incentive. Any program of averaging is a program of planning for mediocrity.

Patient Financial Interest

The patient should share some financial interest in his dental care; therefore, a co-insurance, or co-participation factor should be

encouraged. This makes for a more interested patient, and one that also acts as comptroller of the program.

Pre-Statement of Cost to Patient

This is necessary to prevent misunderstanding and is in itself a time tested economical law.

Professional Review Committee

The profession should establish a committee to review the programs to insure that the program does not fail because a few unscrupulous operators give it a bad name. This committee must have authority to deny further participation to those found to be consistently doing substandard dentistry, or employing unreasonable economic policies.

At the present time there are a number of programs operating which do measure favorably when judged by these standards. They are administered in a number of ways, and the details of administration must not be confused with the fundamentals of operation. All programs by and large must leave the professional decisions to the profession, and no form of administration that would encroach upon this premise can be embraced.

With these fundamental points in mind, and I realize all too well that there is great room for expanding the reasoning behind them, I believe the dental profession can look with great confidence to the future. However, this may not be all a bed of roses. To sincerely do a study of self-analysis is not easy, and then to have the intestinal fortitude to carry through and actually police the programs will take men of courage, but it is my belief that we should insure the pre-paid purchaser that he will get value received for funds expended, and that if he does, the other concessions he has requested, such as reduced fee programs, closed panels, or preferential fees will be doomed.

Moderator Hillenbrand: As a matter of information, I think you may like to know that the American Dental Association will provide pre-payment insurance for its employees and their dependents on a co-participation basis. For many years the dental

profession has been looking for an insurance program and one of the trends, as Dr. Williams indicated, is the use of the prepayment mechanism. If this grows—as grow it must and grow it should—we will see one of the important changes in the practice of dentistry and the provision of better dental health services to more of the people.

We come to one of the papers that I think we might call the heart of the panel discussion because you have heard from all of the technicians as to how various aspects of various programs could be administered, but the responsibility for such programs must fall somewhere and the next topic is where this responsibility falls. The speaker is Dr. Carl L. Sebelius, recently of Nashville, now of Chicago.

Responsibilities for Health Care As They Rest With the Profession And the Community

CARL L. SEBELIUS, D.D.S., M.P.H.

A principle used in social, political, and administrative science should apply to a program of dental health for the American people. The principle is that the responsibility for the development and conduct of any program should rest with the smallest unit which has the capacity and is willing to carry out the delegation. This principle is carried out in the long-standing statement of the American Dental Association when it is stated that dental health should be the concern first of the individual, then the family, the community, the state, and the nation, in that order.

To set forth and reach the long-range objective of developing a dental health plan for the American people, it seems certain that such a program cannot be put into operation overnight, but must develop project by project over a period of time, with parts of the

program put into effect that seem to have the highest priority. One can be certain that communications between the profession and the community must be strengthened, and that dental problems are understood by both groups. The dental profession must be in a position to shoulder much of the responsibility of initiating such a program, since dental diseases generally are not considered by the public to be dramatic, and oftentimes are overlooked due to the fact that there seem to be other problems of a more urgent nature. If the dental profession is not strongly motivated by a conviction that dental health of all people must be improved, many delays in the development of a dental program will take place and little will be done to raise the level of dental health in our country.

The dental profession needs to face up to the fact that what happened in countries where the profession was not well organized, and without a policy in regard to dental care, can happen to us. It had little to say about the type of dental health program these countries have today. In other countries, however, the profession has had a definite part in the development of their program which usually has been directed toward dental services for children.

Social changes are rapidly taking place throughout the world. Recently a physician well versed in social security programs of a medical nature stated that "the horse of social security is galloping very fast indeed." Factors such as are suggested in his statement need to be recognized by the dental profession so that a realistic and strong policy can be taken which meets the needs of the citizens of our country and is satisfactory to the profession. We need to tackle this problem together.

The Profession

Some of the responsibilities of the profession are to work out ways of providing dental services to groups such as welfare recipients, the handicapped, aged, institutionalized or hospitalized patients, unions seeking care for their members and families, and others; to cooperate with agencies designed to promote better dental health and to understand their aims and objectives; to maintain standards so that all people have a higher regard for dentistry and do not consider it a luxury service; to take its rightful professional place in the community by being active in civic affairs and participating in dental programs of education, prevention, and care; to participate

in program planning which places special emphasis on the prevention and control of dental diseases; and to promote dental health through organized community efforts.

The Community

While leadership and responsibility for good dental health rest primarily with the profession, the community has many responsibilities in this field. The slow acceptance of fluoridation as a public health measure is an example of community apathy. Here is a method by which dental caries can be reduced by two-thirds. Communities have set up voluntary agencies for many diseases, many of which affect only a small percentage of the population; yet, no voluntary agency has been set up for dental diseases which affect most all people. There is more misinformation on the subject of dental health than in any other health field. The people of the community should realize their responsibility and place the dental health program high on the list of items which should receive attention.

To summarize: It is essential for all groups to work together. The responsibility for dental health care rests both with profession as well as with the public. Prime responsibility should be taken by the group which has the capacity and is willing to take such responsibility. Planning, communications, and teamwork are essential for the development of a program of dental health for the American people.

Moderator Hillenbrand: I am sure you are all agreed that in the ultimate, dental health care depends upon dentists. This depends upon the reserve of dental manpower, and to a lesser degree, the dental hygienists and dental assistants are able to become members of the dental health team. We will now examine this area briefly with several speakers. The general topic is "Need and Availability of Health Service Personnel."

The first speaker is B. Duane Moen, director of the Bureau of Economic Research and Statistics of the American Dental Association, who probably knows more numbers about the dental profession than any other man in the country.

A Statistical Analysis of Dental Manpower

B. DUANE MOEN, M.A.

The population in the United States is growing at a faster rate than is the number of dentists, and chances of reversing this trend are slim. However, it is useful to analyze, from time to time, the latest quantitative information available on this problem, as a measure of its seriousness and as a basis for planning remedial action.

A bit of history of the supply of dentists may help to place in perspective the current situation. According to the decennial census, in 1840 there were 1,200 dentists, or one dentist for every 14,224 people. Ten years later the situation was much improved, with one dentist for every 7,934 people. The ratio continued to improve until the 1930 census, when there was one dentist for every 1,728 persons. Since 1930, the supply of dentists in relation to the population has declined. The ratio was 1,865 in 1940 and 2,009 in 1950. The count of dentists from the 1960 census has not been released, but it will probably be in the neighborhood of 84,000. If so, the population per dentist based on the 1960 census will be about 2,150.

Dentists in the armed forces and on staffs of dental schools are generally not counted as dentists in the census. The population-dentist ratio based on all professionally active dentists is approximately 1,950 persons per dentist. In 1955, this ratio was estimated to be 1,888.

A comparison of population increases in past decades provides a basis for future expectations. In the 1930's, the population increased by 9 million; in the 1940's, 19 million, and in the 1950's, 29 million.

The Bureau of the Census in 1958 issued population projections to 1980. Actually, four projections were issued, based on various assumptions regarding the birth rate. The second highest projection (Series 11) is often regarded as the "most likely" of the four projections. Since these projections were issued, the population has grown faster than indicated by Series 11, but not quite as fast as indicated by Series 1.

If the population does increase as expected by the Series 11, the increase will amount to 33.7 million persons in the 1960's, and 46.2 million in the 1970's. This would mean a total population of 213.8 million people in 1970, and 260,000,000 in 1980.

There appears to be no chance that increases in number of dentists will keep pace with population growth. Currently, dental schools are graduating about 3,250 dentists per year. However, when losses to the profession through death and retirement are taken into account, the net gain of professionally active dentists is estimated to be 1,000 or less per year. In order to keep pace with current population growth of about 3,000,000 per year, the increase in number of dentists would have to be about 1,500 per year instead of 1,000. The average dental school graduates about 72 dentists per year. Thus, it would require about seven additional dental schools of average size right now to maintain the existing population-dentist ratio. The schools established since World War II average only about 50 graduates per year and it would require ten schools of this size right now to maintain the existing ratio.

Population growth is expected to average 3,620,000 per year during the period 1965-1970, and 4,620,000 during the 1970's. In the 1970's, then, a net gain of 2,370 dentists per year will be required on the basis of one dentist per every 1,950 persons added to the population.

Whether it will be necessary to maintain the existing ratio of dentists to population is a debatable question. The supply of dentists in relation to the population has been declining since the 1930's. The decline continued during the 1950's. Yet, the Bureau of Economic Research and Statistics has found in its surveys of dental practice that dentists are not falling behind in their ability to meet the demand for dental care. The average wait for an appointment actually decreased slightly between 1952 and 1958, and the ratio of dentists who reported they were too busy to those who reported they weren't busy enough, remained almost constant. The use of auxiliary personnel has increased greatly, and the majority of dentists now have high-speed handpieces. Office efficiency has been increased in other ways. As a result, the productivity of the average dentist has increased during the last decade at a rate of approximately 3 or 4 per cent per year.

Whether dentists can continue to increase their productivity at

this rate is uncertain. There is no certainty of any future development in dental equipment that will promote productivity to a degree comparable to that of high-speed drilling equipment. There is some uncertainty, too, regarding the potential of auxiliary personnel as a means of increasing productivity. Some dentists do not have the training or the temperament to utilize additional personnel. With the complete freedom of location that dentists enjoy, there will always be concentrations of dentists in certain desirable places, and many of these dentists will not be busy enough to warrant the employment of auxiliary personnel.

Some concern has been expressed regarding the ability of dental schools to attract a sufficient number of qualified students. It should be noted that the pool of potential dental students will increase greatly in the near future. In the age group 18 to 21 years, there were 9,605,000 persons in 1960. This figure will grow to 12,153,000 in 1965, 14,573,000 in 1970, 16,265,000 in 1975, and 18,634,000 in 1980. In other words, the number of people of undergraduate college age will about double in 20 years.

Not only will the population of college age increase markedly, but the proportion of this population going to college will also increase. The Office of Education, U. S. Department of Health, Education and Welfare, issued projections of earned college degrees to 1970. The projections of bachelor's and first professional degrees were 405,000 for 1960; 534,000 for 1965, and 718,000 for 1970. This is a projected increase of 77 per cent in bachelor's and first professional degrees from 1960 to 1970, which compares with a projected increase in the population 18 to 21 years of age of 52 per cent. On the basis of these two figures, 77 per cent and 52 per cent, it would appear that the expected increase of 94 per cent in population by 1980 would bring an increase of 139 per cent in the number of earned degrees.

Unless formation of new dental schools occurs much more rapidly than in the recent past and in the foreseeable future, it appears likely that many qualified aspirants will be denied the chance to study dentistry.

In summary, I should like to make the following salient points with respect to the supply of dental services:

1. The population has for three decades been growing faster, proportionately, than the number of dentists, and this trend will continue in the foreseeable future.

2. Dentists have been able to increase their productivity to such an extent that the length of wait for an appointment has not increased, at least during the last decade.
3. Not only is the population growing tremendously, but per capita consumption of dental care is increasing rather rapidly.
4. Whether dentists can continue to "keep ahead" of dental demand is uncertain, because the effectiveness of future technological developments and preventive measures is uncertain.

Moderator Hillenbrand: When we discuss manpower needs there are many people who think that the numbers game is being played. This consists in taking a variety of figures and statistics and coming out with the answer you want. I am sure after hearing Mr. Moen, however, we are convinced that there is a problem, but this problem must be approached realistically.

In order to tell us some of the realistic approaches to the manpower problem, we have asked Mr. Reginald H. Sullens, who is executive secretary of the American Association of Dental Schools, to participate in this panel.

Realism in Meeting the Personnel Problem

REGINALD H. SULLENS, B.M.E.

Injecting "realism" into a complex of circumstances as variable as those under discussion here today is indeed a challenge. In order to reduce this assignment to reasonable dimensions, I have elected to pass over several of the approaches which appear to provide some of the most practical solutions to future dental manpower problems because such activities as the broader application of preventive measures, the more efficient and effective use of auxiliary personnel, and a continued improvement in office efficiency have already been treated in some detail by previous speakers.

I would like to focus this discussion on three programs which appear to have merit, both in terms of financial realism and in terms of possible attainment. First, and of extreme importance, is the need

to continue our studies of increasing the efficiency of existing facilities. Even though the attrition rate in dental education is as low as that in any field of professional education, we know that there is still about a 7 per cent loss of students during the four year dental curriculum. Reasons such as illness, catastrophic financial reverses, and other circumstances beyond control will undoubtedly always exist, but we can and should strive continuously to eliminate the loss of students through academic failure and various types of emotional disturbances.

Continued and increased emphasis on testing programs for the selection of students and on counseling programs throughout the four years of dental school will bear large dividends for the small amount of effort and money invested. For example, if the mortality rate can be reduced by only 2 per cent, there will be 72 more dentists graduated in 1964—the equivalent of one new dental school of average size.

Many dental educators will admit that it may be possible to increase the utilization rate of their existing facilities. The accelerated programs of World War II are one example of a way in which space can be used more of the time. However, for a solution of this type to be truly "realistic," there must be careful consideration given to the problems which are generated by an accelerated educational program. For example, there needs to be an increase in the number of faculty available, a fact which may make "acceleration" unrealistic. There are many special scheduling problems which must be confronted and solved. In spite of all of these problems, it is my personal view that we should give careful consideration to some type of accelerated program as one means of increasing dental manpower in the future. In this connection, it should be mentioned that several of the liberal arts colleges and universities have already embarked upon accelerated programs and many others are giving this possibility serious consideration.

The second area in which there seems to be need for mature and unemotional evaluation is the construction of new dental schools. Even though we may not all agree on the precise number of new schools needed, there are few who deny that some new dental education facilities will be needed within the next few years. In my personal view, a realistic evaluation of this question must include a recognition of the severe financial problems involved in building

and supporting new institutions. Recent estimates place the cost of building and equipping a dental school for 100 freshman students at about $6,000,000. Annual operating expenses for a school of this size are at least one and one-quarter million dollars. To be realistic, it seems to me that the search for funds needed for new schools—whatever the number—and the rehabilitation and expansion of existing schools must include all possible private, state, and federal sources. The solution of a national problem—which dental health most certainly is—seems to me compatible with the utilization of national resources under the proper conditions.

In the planning of new schools, we need to increase our effort to determine the approximate geographical locations in which additional schools might be most effective in meeting the manpower problems during the coming years of rapidly changing population distributions. A better understanding and broader support for the various regional compact programs which are now in existence could do a great deal in spreading the base of financial support and might, if properly planned and directed, make it possible to start a dental school in areas which otherwise could not support one.

Third, and finally, there is tremendous potential in studying the changes which might be made in the dental curriculum to bring about increased efficiency and productivity by the dental graduate. Many of you are undoubtedly already familiar with the programs which are now conducted in 40 of the dental schools in the United States designed to increase the dental student's ability to operate efficiently with a chairside assistant. We do not yet know precisely what the impact of this program will be but it is nearly certain that it can and will alter materially the long range projections which have been made on the number of dentists needed by 1970 or 1975. A continued emphasis on teaching the concepts and application of principles of preventive dentistry at the undergraduate dental student level will certainly have its effect.

Perhaps not really "realistic" at the *present* time, is the thought that dental education might well experiment with the two year biological science school, following completion of which the student would transfer with advance standing to a regular four year dental program. To be sure, there are many difficult problems involved in this approach, but the seriousness of the impending dental manpower shortage justifies the *consideration* of all feasible solutions.

At its 1961 annual session, the American Association of Dental Schools adopted a resolution:

> To the effect that the Association encourage investigation of and possible experimentation with a two-year biological and preclinical science program in dental education, upon completion of which a student could transfer with advanced standing to an established dental school.
>
> It was further recommended that consideration of such a program should be on a "regional" basis, because of the possibility of preclinical problems, . . . that consideration should be given to the location in an area and in a relation that may lead eventually to expansion to a four year school.

It is entirely possible that an experimental program with a two year dental school may be started within the next year. It is equally possible that an evaluation of this experiment will demonstrate that dental education is not amenable to the two year biological science school. Within the context of the problem this morning, however, it seems proper that we give consideration to all reasonable efforts of the dental profession to find solutions for the obligations which have been intrusted to it by the public—the highest possible level of dental health for all of our people.

Moderator Hillenbrand: Recruitment is a problem in which the profession and the American College of Dentists have had very large interests and I would hope they would have increasing interest in the years to come, for it is important to the maintenance of a satisfactory level of health personnel. The member of the panel who has been asked to speak on this subject is Dr. J. Wallace Forbes.

Recruitment of Health Service Personnel

J. WALLACE FORBES, D.D.S.

The dedication of our program this morning to "A Dental Health Plan for the American People" will have been in vain indeed, if we cannot increase our recruitment for more and better personnel for health service. The entire basic foundation of the many facets of the dental health plan that have been discussed and presented on this

platform depends upon the quality, number, caliber, and stature of the youth who are to carry it to fruition. Therefore, the very success of this undertaking will be directly proportionate to the constant flow of qualified recruits into the profession.

What can we accomplish if we plan to build more dental schools if they cannot be adequately staffed? How can we increase dental services for the hospitals, encourage more dental research, take care of the dental needs of an expanding population, if we do not attack the fundamental problem first? None of our fondest dreams will be satisfactorily realized if we do not concentrate our efforts on the most important problem of all—*the recruitment of health service personnel.*

Maybe we should return to a study which originated in 1958 in the Committee on Recruitment of the American College of Dentists. Under professional guidance the assimilation of data resulted in a comprehensive and pertinent report. This was published in the JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS in March 1961, titled "The Dental Student."

It is amazing how many surveys we, as Americans, are willing to undertake and yet never make any tangible use of the results. We are willing to spend valuable time and money to assemble these facts and publish the reports so that we may distribute them to supposedly interested parties. The statistical data, in most instances, is then filed on dusty shelves never to be used. Of all the surveys made each year in this country, it would no doubt be alarming to learn how few are ever used for the purposes for which they were originally intended.

The aforementioned study, "The Dental Student," which I recommend for your thoughtful consideration and study, has brought forth many exciting and provocative reflections. In fact, too many are presented to critically examine all of them at this session. The study was originally undertaken because members of the American College of Dentists were seeking to learn what motivating forces encouraged youth to enter dentistry. If we could discover this, it would be possible to focus and intensify our efforts at recruitment. The American College of Dentists is not in a position to continue on where this report leaves off. This College as an institution never presumes to speak or act for organized dentistry. However, being composed of the higher echelon of the profession, the College merely

suggests guideposts for the best interests of dentistry. Each Fellow then has the opportunity to carry back the findings of this study to the area of organized dentistry or to the community in which he has the most influence. In this way the efforts of the committees of the College will not have been unproductive.

Our immediate problem resolves itself into one simple question: How do we encourage high caliber youth to enter dentistry?

We have reflected many, many times in the past on the need for more dental students each year to retain a sensible proportion of dentists to the expanding population. What Giant Step are we taking to solve it? Our study shows that the public image of the dentist is not as dedicated or altruistic as we would like to believe. There is still a public fear of dentistry, and most editorials treat it with horror or humor. This is mixed with an image of the dentist who is greedy, over charges, and has no desire to take part in public affairs. We know that this is not true of the majority of the profession. However, the public is more apt to hold the minority view. A recent reprint from a highly regarded sociological periodical, *The Midwest Sociologist* in referring to the dentist states, "The general public . . . still considers him something of a mechanic in a white coat."

It now becomes our responsibility to give the public a truer and more realistic viewpoint of the dentist. We must realize that we have to make the public aware of the many outstanding accomplishments and contributions that dentists are making to science and to the community. We too often have a tendency to discourage the publication of those accomplishments under the assumption that they are "advertising" or are being used for "self agrandizement." After all, the attraction to or shunning away from the study of dentistry, by the youth of our country, is based on public interpretation. We find that the greatest influencing factor in encouraging youth to enter dentistry is the dentist himself. Here is proof in itself that the destiny of dentistry lies in the hands of the dentist.

If we are sincere about doing something to solve the problem of the national dentist shortage, we must change the present public image of the dentist. We must also take into consideration the two main road-blocks that constantly arose in the study when dental students were interviewed across the country, they were the time and cost factors expended to gain a dental education.

The old cliché states "time is money." Then we should mainly con-

sider the cost. Financial aid to dental students has been a real problem for most parents. Even with the constant rise in tuition we are all aware that the dental college is never fully reimbursed for its per capita expenditure to educate each student. Some relief must be found for the parent, the student, and the college alike. Most of the dental schools have some form of scholarships. Some have meager loan funds, but more than one-third of the American dental schools have no scholarship aid whatsoever. The few scholarships that are available are in most instances based on the parents' income being below a certain level. The middle income group tends to be caught in a tight squeeze. When the parents in this bracket suddenly come face to face with the financial realities of college costs, the actual figures are a shock. Many promising and talented youngsters will not even consider studying dentistry because it is too expensive. A father's salary may be too high to qualify for a scholarship, but too low to pay all the bills. Annual escalating tuition together with the long time involved in attaining a baccalaureate and dental degree may price us right out of a big piece of the student market. During the study when freshmen dental students were being interviewed, they would reiterate that they had friends in the community or undergraduate college who were good students, and who were interested in dentistry; but because of the possible expenditure of an additional fifteen thousand dollars after college, could not consider dentistry as a profession.

We find that the one real big stimulant to our recruitment problem, will be to establish more scholarships and loan funds for dental students. The County Dental Society here in Philadelphia is cognizant of this problem. A committee has been formed to make a study at the dental schools of the University of Pennsylvania and Temple University with the thought in mind of creating a loan fund for the students. I would suggest that other local dental societies consider forming similar committees to make loans or grants for dental education.

To summarize: The two major objectives brought into bright and revealing focus to encourage high caliber youth to enter dentistry are first, we must be ever vigilant of the proper image of the dentist that is disclosed to the public, and secondly, we must create some financial aid for those highly qualified students who otherwise would not be able to study for our profession.

Editorial Note. After concluding his paper, Dr. Forbes continued:

"That is where the paper was supposed to end, but just before I came up on the platform I was handed a note and asked to announce that the Board of Regents of the College had approved a plan to raise a student loan fund of $1,000,000.00 to be spear-headed by the Sections of the College and in cooperation with the profession at large at the state level. The project is to be administrated by the Fund for Dental Education, Inc."

Later, at the conclusion of the panel discussion, Dr. O. W. Brandhorst, secretary of the College, commented:

"I want to supplement what Dr. Forbes said in relation to the student loan fund to this extent: that the effort the Board of Regents see in the future for the raising of an underpinning, you might say, for the recruitment problem and aid to dental students will be channeled through the Fund for Dental Education, Inc. We will merely use the sections of the College as "needlers" toward that end, and I will probably be doing the needling.

Moderator Hillenbrand: I have an announcement which I think will be of interest to you in connection with what Dr. Forbes said the American College of Dentists will do. The Board of Trustees of the American Dental Association at this week's session will announce to the House of Delegates the contribution of the sum of $150,000 to initiate a student loan fund under the auspices of the Fund for Dental Education. I think we can see the beginning now of the creation of an adequate student loan fund to assist in the solution of the problem of dental manpower.

The next speaker, as you know, is the speaker of the House of Delegates of the American Dental Association and is willing to speak anywhere, any time, on any topic, and at any length. Seriously, the next speaker is a distinguished dean of one of the local dental schools who has had a lifelong experience in the field of dental education. I know he is concerned, as are his colleagues in dental education, about the difficulty of financing the cost of dental education. The speaker will be—and this one really needs no introduction—Dr. Gerald D. Timmons, dean of Temple University School of Dentistry.

The Training of Health Service Personnel—Meeting the Cost Of Such Training

GERALD D. TIMMONS, Ph.G., D.D.S.

It is said that somewhere in this world there is a pin, on the head of which is engraved the Lord's Prayer. I have never seen this great exhibition of engraving art, but I am sure that I now have some conception of the engraver's thoughts as he first began to survey his task. Such were my thoughts when Dr. Brandhorst asked that I take seven minutes to discuss a subject which required 184 pages of careful development in the Final Report of the Commission on the Survey of Dentistry in the United States.

The subjects listed on this morning's program are such as to indicate that many of the other speakers either have discussed or will discuss many parts of the Survey which will have bearing, either direct or indirect, on dental education. For this reason I have elected to discuss but two points, either of which will have great impact on the path dental education is to take in the future. These are: first, the cost of dental education to the schools, and second, the cost of dental education to the student. In both of these areas there are findings of substantial significance to the well being and the future of the dental profession. Also, as a by-product of the discussions, it is my hope that appetites will be sufficiently whetted to create a desire to study the entire report of the Commission.

Cost of Dental Education: To the Schools

In entering the sixth decade of the century, I am impressed that, as in nearly every other aspect of our economy, the cost of educating a dentist has been steadily increasing in every dental school. In the last decade alone, this cost has increased by a striking 129 per cent. Today, among all of the schools, more than $3,000 annually is spent on the education of each student. Obviously, some dental schools are better supported financially than others, and so the range among the best supported schools is as high as $6,400 per student, and

among the less well supported schools as low as $1,860 annually. By 1975, the Survey of Dentistry estimates that all schools may need to spend an average of $5,000 annually for each enrolled student.

To generalize on statistics, particularly if they involve cost analyses, is dangerous business. Fortunately, I do not have time today to indulge in this kind of hazardous prophecy, tempting as it may be. It will, I believe, suffice for me to alert the profession that costs of doing business in dental education—in fact in all institutions of higher learning—are on the rise. Our best accountants and comptrollers cannot predict with any accuracy how far the trend may go, nor at what exact point it may level off and end. To you and me, however, the accent on costs of dental education draws into sharp focus the need to obtain increased and continuing financial support to ensure the continued progress in both education and research which has characterized the recent decades of growth of the dental profession.

Today, the dental schools spend annually more than $43 million for basic operations. By 1971, it is estimated that annual expenditures will be nearly three and one-half times greater, or about $145 million. In this projection of gross annual expenditures, schools either now receive or might anticipate receiving slightly more than $71 million annually. It is disturbing to note, however, that nearly $74 million of additional income—not now identifiable—will be required for total operational expenses in 1971. What is alarming about this $74 million projection is that more than a 100 per cent increase of support from traditional sources seems indicated by 1971. If I understand the full significance of this projection, alumni groups, students, foundations, benefactors, business corporations, universities and public agencies of government very soon must be persuaded that in the public interest, dental services merit sharply increased financial support from all segments of the economy.

Even a cursory view of the problem of financing dental education in the decade ahead confirms a finding of the *Survey of Dentistry* that "the lack of proper financing is the most serious problem of dental schools today." To me it seems likely that proper financing of operations will continue to be the Number One problem of most dental schools. If it is agreed that a primary responsibility of the profession is to provide the highest quality of dental service to the

people, I can only emphasize that the need for continued development of dental education and research, in this decade and forward, will require a full scale fund raising effort of dimensions not thus far conceived by the profession. If this effort is to be successful, all known sources of support—both private and public—must be thoroughly alerted to the importance of dental health to the public health. In my opinion, how best to accomplish these objectives is the primary challenge confronting the profession today.

Cost of Dental Education: To the Student

I have just discussed the fact that deans and university presidents are expecting their share of financial headaches in obtaining further support for operating funds for dental schools. May I now turn your attention to the equally vexing financial problems that now confront dental students.

A current study of the cost of education to dental students has just been completed by the Council on Dental Education and the American Association of Dental Schools, in cooperation with the United States Public Health Service. This study shows that since 1953-54, costs, particularly tuition and other items of school expense, have increased for all categories of dental students. The studies show that a married student should now plan on a cost of $18,300 for the four year dental curriculum; a single student living away from home will spend approximately $12,600 for the four year program, and a single student living at home now averages about $10,000 for the four years. It is generally agreed that the cost of a dental education is among the highest, if not the highest, of the health professions.

While there is much talk currently of federal aid programs for dental and medical students, except for the recently enacted National Defense Education Act of 1958, no such programs have been enacted by the Congress. It is good, therefore, to know that financial aid to dental students is today more abundantly available than in 1954. It still must be noted, however, that the average scholarship or loan awarded to the student supplies less than one-sixth of the average student's annual school and living expenses. Moreover, dental students are now requesting more financial assistance than can be supplied, and many students are now receiving less financial aid

than has been requested. Scholarship aid is increasing in publicly supported schools, and loans are more plentiful in both public and private schools.

All of this information is encouraging. However, perhaps the figures from this study that we should examine more carefully are those which show that in 1961 an estimated 24 per cent of all students enrolled, borrowed an average amount of $625 each. Of these, 12 per cent were recipients of loans made available under the National Defense Education Act student loan program.

Today few schools have uncommitted loan funds in any significant volume. Fourteen schools have no such funds available, and an additional 22 schools have funds at hand of less than $10,000. Eleven of the dental schools reported having funds averaging $30,000, but these same 11 schools also held 80 per cent of all uncommitted loan funds. There is evidence that several of the dental schools having loan funds have imposed such strict conditions of awarding them that students were either discouraged from or unwilling to apply for them.

I must emphasize that there is an immediate need to provide far greater financial support to dental students for their professional education than is now available. The profession is only now beginning to realize the importance of such support in perpetuating the integrity of a proud tradition. While student financial aid is now improved and continues to improve, we must realize that continuing and increasing this form of aid is strongly indicated unless dentistry is to become marked as a profession for only the economically privileged class of our society. Providing sufficient and high quality dental care for the public is the responsibility of the profession. Attracting and motivating young people to study dentistry is also the responsibility of the profession. Scholastically qualified and interested young people wishing to study dentistry must not be deterred from doing so, particularly if the reason for turning to other professions prove to be financial rather than academic qualifications. In my view, this is challenge Number Two confronting the dental profession and dental education today.

Moderator Hillenbrand: The final speaker on our program is a patient man, but I think it is appropriate that he is the final

speaker because all of the things the members of the panel have discussed here this morning are rooted deeply in research. This paper will be given by Dr. Seymour J. Kreshover, the associate director of the National Institute of Dental Research, Washington, D. C.

Research in Dentistry

SEYMOUR J. KRESHOVER, B.A., D.D.S., M.D., Ph.D.

In order for dentistry as a health profession to maintain its major and special responsibility to society, it must continue to recognize and accept the particular task of contributing, through research, to the furtherance of basic and clinical knowledge of the causes of oral and related diseases; to the development of improved methods of treatment, correction, and prevention; and to the consequent maintenance of high standards of health. Obviously, this research challenge can be met only by an availability of scientists qualified in basic biological and clinical fields, the support of research programs and organizations that will correlate and coordinate the skills and talents of scientific disciplines, and the provision of adequate facilities for the conduct of these activities.

Among the more important obligations that we face are (1) an acceleration of fundamental research on cleft palate and other congenital anomalies involving growth and development of the oral and facial region (including malocclusion), and an increasing cohesion of such diverse professional interests as oral and maxillofacial surgery, orthodontics, prosthodontics, speech pathology and therapy, otolaryngology, psychology and genetics; (2) the further development of newer, recently advanced, concepts of dental caries etiology which demonstrate that the disease does not occur in germfree animals, and may, in fact, be caused by specific strains of streptococcal microorganisms; and (3) the further development of an increased emphasis on periodontal disease related particularly to a better understanding of the physiology, biochemistry and morphology of the periodontium; the relationship of general systemic factors

to the disease; the etiological significance of various microbiological and enzymatic factors; the epidemiological patterns of the disease as indicators of socio-environmental influences; and the mechanisms of calculus formation and its relationship as a local factor to the disease process.

In the area of dental caries control, although the benefits of fluoridation have been considerable and provide our most effective measure today, there is no reason for complacency. Rather, we must continue to seek further measures such as additional trace elements, chemotherapeutic agents, and nutritional supplements to effect an even greater control of this disease. With the new evidence that caries in rats and hamsters is a transmissible disease of specific microbial origin, it also is quite conceivable that an effective vaccine may be delevoped.

Turning now to the area of so-called physical biology, today's major effort to more fully utilize the technics of electron and X-ray microscopy, electron diffraction and crystallography have led to the development of important new knowledge regarding the structural, physical and chemical properties of calcified tissues, their development and the calcification process itself. Such accomplishments are providing a base of much needed knowledge upon which to build more practical programs of prevention of oral and dental diseases.

While it is probably true that treatment, correction, and prevention should be considered in the reverse order of priority, it is essential that therapeutic and other practical advances keep pace with basic activities. Thus, to cite but a few examples, there must be an ever-increasing effort to produce more effective synthetic restorative materials; develop technics of instrumentation even beyond the recent major advance in high rotary speed cutting devices; and further prosthetic design and construction so as to assure optimum function for eating, breathing, speech, and esthetics.

Although not generally considered in the category of research, it is, nevertheless, also essential that a major effort be made to expand experimentation in methods of professional education, communication of new findings, training of dental teachers, operating room design, and other practical considerations related to the provision of optimal dental health care. Given a continuance of financial support—federal, state, foundation and other public and private sources

—coupled with a continued striving for new knowledge and a dedicated responsibility for the attainment and maintenance of optimum health for all, the future should indeed be bright.

Moderator Hillenbrand: I should like to express my thanks to my colleagues on this panel. I think you have made excellent presentations. I should also like to express my thanks to the members of the audience—you have done an excellent job of listening.

There are three items left on the program. First, a *Summary* by the Moderator. Well, I think it was a good panel. This takes care of the *Summary*. Second, *Discussion*. This will take place in the corridors after the meeting. That takes care of that item. Now, the third item and my final remarks:

The Future Image of Dentistry

HAROLD HILLENBRAND, D.D.S.

Dr. J. Wallace Forbes has had to leave the meeting; I am sure he did not leave because of what I am going to say. But I disagree with the statement that he quoted: "The general public . . . still considers him [the dentist] something of a mechanic in a white coat." I do not believe that the people of this country hold to that thought.

I think, rather, the public feels that the American dentist is professionally and scientifically competent; that he is the product of a good system of education which, however good, needs some improving; that he is subject to ethical disciplines of the highest order; that his relation with members of other health professions is excellent; that the system of research his profession uses is surely the best in the world; that he is socially aware; and that he is recognized always for his ability and willingness to look at, examine, and hopefully, solve problems as we have tried to do here today.

I think *that* image of the American dentist will brighten as we

solve some of the problems that have been put before you this morning.

And now, as the final note, I return to the one with which I opened the panel. It is a quotation from the Rockefeller Report:

"Democracy aims to provide a mobile society and a free political process that will give the individual the opportunity to participate in the affairs of his community. Are there enough individuals whose sense of responsibility to themselves and their fellowmen will lead them to take this opportunity? Are there enough who will use this opportunity with intelligence, integrity and care? This is the challenge that democracy puts to its citizens. The democratic faith is that they will respond."

My faith is that the dentists of this country will respond.

Health Opportunities for People Everywhere

S. S. HOPE 1

This hospital ship is the first of a great fleet that will carry physicians and dentists—and associated personnel in the health field—from the United States of America to friendly nations and to newly developing nations of the world with the sole objective of:

exchanging health knowledge
sharing health methods and techniques
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In this program of *personal* international relations you Fellows of the American College of Dentists are asked to support HOPE I. Your contributions may be sent to the

National Dental Solicitation Chairman
Project Hope

HENRY A. SWANSON, D.D.S.
1818 M Street, N.W.
Washington 6, D. C.

THE 1961 CONVOCATION

SUNDAY, OCTOBER 15, 1961
BELLEVUE-STRATFORD HOTEL, PHILADELPHIA

The American College of Dentists was organized on August 20, 1920. The purpose of the founders was to establish an organization that would be imbued with the highest ideals for the dental profession and lend its influence to every movement having for its purpose the advancement of the profession and the betterment of its services to humanity.

The activities over the intervening years record the efforts that have been expended and the successes that have been attained.

However, this is not time to sit back and rest on our laurels over our achievements. Even though the College has contributed much to the health and welfare of our people, we are at the present time faced with many problems that require thought and good leadership. We must, each of us, continue our efforts and give of our knowledge, so that these problems may be met and dealt with in the best interest of the public and the profession.

At last year's Convocation, we were fortunate to have one of the early reports on the "Survey of Dentistry" presented by four staff members of the Commission that made the Survey. They depicted the status and the needs of dentistry and made recommendations for its improvement, not only for the present, but also suggested a long-range program for dental practice, dental education, dental research and dental health.

This year, in response to the recommendations of the Survey, we present ways and means for attaining these objectives.

This panel will present some of the major items that must be given consideration in our continued broad dental health service planning. It is hoped that these discussions will kindle a desire for the further development of details for a broad dental health service for the American people whom we are privileged to serve, and who have reason to look to the dental profession for guidance in such development.

EDGAR W. SWANSON,
President

THE MINUTES

THE MORNING PROGRAM

Edgar W. Swanson, President, presided. The invocation was pronounced by Dr. David H. Wice, Rabbi of Congregation Rodeph Shalom, Philadelphia. In an Executive Session, the following reports were presented and received:

Necrology—Robert P. Dressel, chairman, Cleveland. The Fellows of the College who died during the past year, as contained in the "In Memoriam" booklet (with additions), were:

Charles Barton Addie, Philadelphia, Pa., October 24, 1960
John T. Ashton, Alexandria, Va., May 22, 1961
Adolph Berger, New York, N. Y., April 4, 1961
Irvin Roy Bertram, Denver, Colo., August 2, 1961
Clinton T. Brann, Orlando, Fla., September 8, 1961
John A. Cameron, Dallas, Texas, May 2, 1961
Wilson R. Conran, Hartford, Conn., December 8, 1960
Morris Cramer, Milwaukee, Wis., September 15, 1961
Alfred Cornelius Current, Gastonia, N. Car., October 23, 1960
Lloyd H. Dodd, Decatur, Ill., September 24, 1961
Thomas G. Duckworth, Boerne, Texas, December 29, 1960
E. Walter Edlund, Melbourne, Fla., September 11, 1960
Roy Oscar Elam, Nashville, Tenn., November 30, 1960
George Boyd Finch, New Haven, Conn., January 22, 1961
John W. Geller, Indianapolis, Ind., June 25, 1961
Homer D. Grubb, Cleveland, Ohio, June 12, 1961
Ira Wilson Hamilton, Ottawa, Canada, November 5, 1960
Cloyd Summerfield Harkins, Osceola Mills, Pa., March 22, 1961
Conrad F. Hellwege, Philadelphia, Pa., January 6, 1961
W. Frank Hemphill, Omaha, Neb., May 7, 1961
Charles Joseph Hicks, Sr., McKinney, Texas, April 12, 1960
William N. Hodgkin, Warrenton, Va., September 7, 1961
Charles R. Jackson, La Jolla, Calif., November 11, 1960
Rolland R. Jones, Santa Barbara, Calif., September 22, 1961
Claude M. Kennedy, Des Moines, Iowa, September 13, 1960
John Kuratli, Portland, Ore., April 29, 1961
Raymond Peter LeRoy, Portland, Ore., December 21, 1960
Frank A. McKennon, Waxahachie, Tex., November 14, 1960
Irvine McQuarrie (Honorary), Minneapolis, Minn., September 9, 1961
Jay Phillip Marshall, St. Louis, Mo., April 4, 1961
Arthur H. Merritt, New York, N. Y., February 10, 1961

These Minutes have been compiled and abbreviated by O. W. Brandhorst, Secretary. The panel discussion and addresses appear elsewhere in this issue.

Franklyn Custer Nelson, Loma Linda, Calif., January 7, 1961
Frederick B. Noyes, Lake Worth, Fla., July 24, 1961
Robert Lester Pallen, Vancouver, Canada, December 30, 1960
George A. Phillips, Bangor, Maine, December 24, 1960
Zenas T. Roberts, Denver, Colo., December 29, 1960
Frank C. Rodgers, St. Louis, Mo., April 3, 1961
Louis E. Sager, Roslindale, Mass., June 20, 1961
Frederick W. Schaeffer, Omaha, Neb., September 11, 1961
Philip L. Schwartz, New Brunswick, N. J., December 15, 1960
Donald Meeds Small, Kennebunk, Maine, September 20, 1961
Charles Louis Smith, Washington, D. C., December 21, 1960
Wiley W. Smith, Baltimore, Md., December 21, 1960
Edward B. Spalding, Birmingham, Mich., November 10, 1960
James H. Springsted, Louisville, Ky., March 29, 1961
Leonard P. Wahl, Wausau, Wisc., February 21, 1961
Tyler James Walker, Saratoga, Calif., February 7, 1961
Henry F. Westhoff, St. Louis, Mo., January 23, 1961
Joseph Donaldson Whiteman, Mercer, Pa., April 18, 1961
Claude Somers Williams, Hattiesburg, Miss., August 9, 1961
Frederick L. Williamson, Hamilton, Canada, December 13, 1960
Fred S. Woods, Portland, Maine, July 12, 1961

The audience was asked to stand in silence for a few moments in memory of the deceased Fellows.

Nominating—Jay H. Eshleman, chairman, Philadelphia. The committee recommended the following men for the several offices:

President-elect	Philip E. Blackerby, Jr., Battle Creek, Mich.
Vice-President	Crawford A. McMurray, Ennis, Texas
Treasurer	Fritz A. Pierson, Lincoln, Neb.
Regents	Vincent A. Tagliarino, Louisville, Ky. (to fill the unexpired term of J. H. Springsted, deceased)
	Frank O. Alford, Charlotte, N. Car. (four year term)
	Stanley A. Lovestedt, Rochester, Minn. (four year term)

There being no nominations from the floor, on motion and vote, the men as named by the Nominating Committee were elected by acclamation to their respective offices.

Indoctrination Address—This annual charge to the new candidates was given by Jay H. Eshleman, Philadelphia.

President's Address—Vice-President George S. Easton presided while President Edgar W. Swanson read his presidential address.

After a brief intermission, the panel discussion "A Dental Health Plan for the American People" followed.

THE LUNCHEON

The luncheon was served in the Burgundy-Viennese Rooms of the Bellevue-Stratford; 635 persons attended. This interlude meeting was under the auspices of the Philadelphia Section of the American College of Dentists; Aubrey P. Sager, chairman, presided. The invocation was pronounced by The Very Reverend John A. Kletotka, President of Villanova University.

Guests and dignitaries at the head tables were introduced. After the luncheon the Joseph A. Ferko String Band, Philadelphia's famous Musical Mummers, entertained with their delightful program, "The Blue and the Gray."

THE AFTERNOON PROGRAM

The ceremony began with a procession of the candidates for Fellowship and their sponsors, the Officers and Regents, and the recipients of Honorary Degrees and Awards. Robert W. McNulty, Orator of the College, pronounced the invocation.

President John A. Perkins, University of Delaware, was introduced and delivered the Convocation Address, "The Humanities and Health Services."

THE FELLOWSHIPS

Fellowships in the College were conferred upon the following:

Francis Joseph Acquavella, Flushing, N. Y.
Perry C. Alexander, Navy
Marvin M. Alderman, Syracuse, N. Y.
Norman E. Alderman, New York, N. Y.
James B. Allen, Athens, Ga.
Paul Edward Allen, Selma, Ala.
Jack Alloy, Philadelphia, Pa.
Nels Jerrald Anderson, Los Angeles, Calif.
Robert George Andrews, Costa Mesa, Calif.
Arnold, A. Ariaudo, San Diego, Calif.
David Joseph Baraban, Brookline, Mass.
Robert Everett Bedell, St. Louis, Mo.
Wilfred Bernard Bell, Army
David August Bensinger, St. Louis, Mo.
Christopher Francis Bentley, Livermore, Calif.
Julius Jack Bentman, Lancaster, Pa.
Robert H. Bernert, Hartford, Conn.
Robert Owen Betzner, Helena, Mont.
Basil G. Bibby, Rochester, N. Y.
William Robert Biddington, Morgantown, W. Va.
Alva N. Blaney, St. Louis, Mo.
Harry Blechman, New York, N. Y.
George Nichlos Boone, East Pasadena, Calif.
Allan Arthur Booth, Sharon, Pa.
Leo Botwinick, New York, N. Y.
Fred Earl Boyers, Morgantown, W. Va.
Thomas Clarke Bradshaw, Blackstone, Va.
Bernard Andrew Brann, Leesburg, Va.
Virgil Westley Brown, Los Angeles, Calif.
Karl Wayne Bruce, Omaha, Neb.

Lewis Franklin Bumgardner, Charlotte, N. Car.
Jack Dent Carr, Indianapolis, Ind.
Charles David Carter, Bowling Green, Ky.
Warren R. Cedar, Chicago, Ill.
Neal W. Chilton, Trenton, N. J.
Malcolm R. Chipman, Spokane, Wash.
Paul Wadsworth Clopper, Peoria, Ill.
Bernard Alfred Cohen, Jackson, Miss.
David Walter Cohen, Philadelphia, Pa.
H. Milton Cooper, Hackensack, N. J.
Lawrence William Cowan, Compton, Calif.
Angelo D'Amico, Stockton, Calif.
Edwin Earl Dawson, San Benito, Texas
Michael James Del Balso, Milwaukee, Wis.
Dominick Joseph De Luke, Schenectady, N. Y.
Walter Joseph Demer, Navy
George J. E. Denicourt, Providence, R. I.
Mary Christine De Risi, Washington, D. C.
William Hermon Derrer, Cleveland, Ohio
William C. Dew, Columbus, Ohio
Arthur Raymond Dewey, Ventura, Calif.
Floyd Everett Dewhirst, Los Angeles, Calif.
Russell A. Dixon, Washington, D. C.
Robert Edward Doerr, Ann Arbor, Mich.
Andrew John Donnelly, Muskegon, Mich.
William Craig Draffin, Columbia, S. Car.
Harold Arthur Drummond, Wilmette, Ill.
Roland Wayne Dykema, Indianapolis, Ind.
William R. Dykins, Nanticoke, Pa.
Wilmer Ballou Eames, Chicago, Ill.
Frederick William Ebinger, Casper, Wyo.
Louis Emory, Army
John Austin Evans, Jackson, Miss.
Joseph Wallace Ewing, Akron, Ohio
George Joseph Figlear, Bethlehem, Pa.
Charles William Finley, Lubbock, Texas
Arthur Falden Fisher, Rochester, N. Y.
H. Gordon Fisher, St. Louis, Mo.
Thomas Ryan Flinn, San Francisco, Calif.
John Henry Flint, Jr., San Francisco, Calif.
Bruno Guido Floria, Washington, D. C.
Russell Oscar Ford, Knoxville, Tenn.
Marshall Matthew Fortenberry, Jackson, Miss.
Lyman Ellwood Francis, Montreal, Canada
Harry Fredrics, Veteran's Administration
Alexander Joseph Freutel, Memphis, Tenn.
Vernon Fricke, Air Force
Joel Friedman, Brooklyn, N. Y.
Arnold Gardey, Saginaw, Mich.
Edward Anthony Gargiulo, Navy
Edmund T. Glessner, Denver, Colo.
Frank Ignatius Gonzalez, Jr., Navy
Robert James Gores, Rochester, Minn.
Arthur Sigmond Gorny, Cheyenne, Wyo.
Fred Wayne Graham, Morris, Ill.
Cyril de Vere Green, London, England
Herbert W. Grinnell, Brooklyn, N. Y.
Joseph E. Grodjesk, Jersey City, N. J.
Jules Paul Guidry, Kirkwood, Mo.
Albin R. Hagstrom, Brooklyn, N. Y.
Edwin W. Halvorson, Los Angeles, Calif.
John Weir Hamilton, Philadelphia, Pa.
Julian Churchill Harlowe, Louisville, Ky.
Frederick Noble Harris, Pasadena, Calif.
William Gordon Hazlett, San Francisco, Calif.
Herbert William Heintz, Utica, N. Y.
William D. Heintz, Worthington, Ohio
Myron E. Henderson, Roanoke, Va.

Charles Houston Henshaw, Des Moines, Iowa
Howard Curtis Hester, Upper Montclair, N. J.
Warren R. Hester, Air Force
William Henry Hiatt, Denver, Colo.
William Leonard Hieber, Akron, Ohio
James Wm. Hipple, Trenton, N. J.
Mellor R. Holland, Minneapolis, Minn.
Herbert Otto Hoppe, Milwaukee, Wis.
Robert W. Hornbaker, Worcester, Mass.
Marjorie Houston, Mt. Prospect, Ill.
Leonard J. Huber, Ste. Genevieve, Mo.
Arthur L. Hudson, Glendale, Calif.
William C. Hudson, Jr., New York, N. Y.
Richard Wm. Huffman, Lansing, Mich.
David Edward Hunn, Troy, New York
Edwin J. Hyman, San Francisco, Calif.
Conrad Lucius Inman, Jr., Baltimore, Md.
Gerald Paul Ivancie, Denver, Colo.
Alfred Jaffe, Providence, R. I.
Clifford G. Johnson, Newtown, Conn.
Reginald Harold Johnson, Port Huron, Mich.
Truman James Johnston, Milwaukee, Wis.
Wilbur Dexter Johnston, New Haven, Conn.
Frederick Sadame Kagihara, Honolulu, Hawaii
Frederick Wm. Chas. Karney, Hearne, Texas
Phillip Johns Kartheiser, Aurora, Ill.
Joseph Herbert Kauffmann, New York, N. Y.
Edward G. Kaufman, New York, N. Y.
Harry H. Kazen, Chicago, Ill.
Alfred Joseph Keck, New York, N. Y.
Stanley Ellis Keller, Birmingham, Ala.
Donald R. Kennedy, Berkeley, Calif.
Jack J. Kimbrough, San Diego, Calif.
Frank James Kratochvil, Jr., Navy
Joseph Krohn, Chicago, Ill.
Arthur Joseph Krol, Chicago, Ill.
Abraham Lamstein, New York, N. Y.
Carl Adam Laughlin, Clarksburg, W. Va.
Ben Lawrence, Dallas, Tex.
Archibald Hamilton Leckie, Hamilton, Canada
Nathan Lewis, Brooklyn, N. Y.
Cyrus Melvin Linden, Great Falls, Mont.
Elias Lisman, Irvington, N. J.
Frank J. Lloyd, East Cleveland, Ohio
William Lones Lockett, Knoxville, Tenn.
Theodore Edw. Logan, Louisville, Ky.
Ralph Waldo Ludwick, Jr., Lincoln, Neb.
Melvin R. Lund, Loma Linda, Calif.
Clarence Edwin McIntire, Portland, Maine
Fred E. McIntosh, Los Angeles, Calif.
Malcolm J. McKinnon, Rochester, N. Y.
Lionel Deckle McLean, Jersey City, N. J.
Elwood Forbes MacRury, Manchester, N. H.
Carl J. Madda, Chicago, Ill.
Herman L. Malter, New York, N. Y.
Herman B. Maltz, Manhattan Beach, Calif.
Walter Joseph Mandler, San Jose, Calif.
Richard Christian Mast, New York, N. Y.
Bruce Trafton Mathias, Camp Hill, Pa.
Meffre Rouzan Matta, New Orleans, La.
David William Matteson, Oklahoma City, Okla.
Wallace Charles Mayo, Pensacola, Fla.
Richard Frederick Messing, St. Paul, Minn.
John Hayward Michael, Baltimore, Md.
C. Richard Miller, Harrisburg, Pa.
Ernest Beckwith Mingledorff, Atlanta, Ga.
Monte George Miska, Chapel Hill, N. C.

Charles Fairbanks Moore, Seaford, Delaware
Mary Lynn Morgan, Atlanta, Ga.
Albert W. Morris, Salisbury, Md.
Francis Frederick E. Morse, New York, N. Y.
George E. Mullen, Brooklyn, N. Y.
Claude L. Nabers, San Antonio, Tex.
John Moore Nabers, Wichita Falls, Tex.
Arnol Ross Neely, Portland, Ore.
Ferdinand Gustav Neurohr, New York, N. Y.
Willard LaGrand Nielsen, Army
Oliver Edward Nobert, Rome, N. Y.
Julio Oscar Novoa, San Salvador, Central America
James A. O'Brien, Dubuque, Iowa
Joseph Timothy O'Leary, Girard, Pa.
Lester Bernard Older, Union City, N. J.
Jack H. Oliver, Mexia, Tex.
Einar J. Olsen, Cleveland, Ohio
Morris Orgel, Freeport, N. Y.
William Newton Orr, Littlefield, Texas
William J. Pendergast, Boston, Mass.
John Marvin Pepper, Pensacola, Fla.
Donald Leroy Peterson, New Orleans, La.
Claude Vivien Pettey, Jr., Magnolia, Miss.
Lyle Henry Pitt, Pittsburg, Texas
Roger William Pryor, Cleveland, Ohio
Charles Edward Pugh, Ft. Worth, Texas
James Harrison Quinn, New Orleans, La.
Samuel Maurice Rafish, Butte, Mont.
Vincent E. Ragaini, New York, N. Y.
William T. Ralph, Belhaven, N. Car.
William J. Ream, Akron, Ohio
James Alvin Reber, Pittsburgh, Pa.
W. Marion Reed, Athens, Ga.
Walter John Reuter, Air Force
Quentin Max Ringenberg, St. Louis, Mo.
Richard Cornelius Ritter, Bozeman, Mont.
George Washington Rock, Air Force
Robert Cornelius Roney, Lubbock, Texas
Ira Franklin Ross, East Orange, N. J.
Eugene A. Rothschild, New York, N. Y.
Kenneth Dielman Rudd, Air Force
Stanley Joseph Ruzicka, Cleveland, Ohio
Harry Saul, Atlantic City, N. J.
Clifton King Saunders, Washington, D. C.
Jacob Schaffer, East Orange, N. J.
Ino Sciaky, Jerusalem, Israel
William Jepp Schoverling, Houston, Tex.
Warren Schneider, Detroit, Mich.
Louis B. Schoel, Portland, Oregon
Otho E. Scott, Chicago, Ill.
Jules B. Seldin, New York, N. Y.
Rocco Wm. Vincent Setaro, Huntington, L. I., N. Y.
Thomas Smith Shuttee, Air Force
Martin Theodore Siegel, Poughkeepsie, N. Y.
James Emmett Skaggs, Jr., Louisville, Ky.
Stanley Thomas Smith, Beaumont, Texas
Bruce Wellington Snider, Austin, Texas
Marvin Sniderman, Pittsburgh, Pa.
Robert Samuel Snyder, Jr., Navy
Sidney S. Spatz, Pittsburgh, Pa.
Leo Stern, Jr., New York, N. Y.
Ford Woods Stevens, Philadelphia, Pa.
Charles J. Stout, Portland, Ore.
Walter Joseph Straub, San Mateo, Calif.
George Straussberg, South Orange, N. J.
Hayward Baldwin Streett, Baltimore, Md.
Charles A. Sweet, Jr., Oakland, Calif.
Paul Eesley Suitor, Navy
Dan Asbury Sullivan, Cleveland, Tenn.
Edward J. Sullivan, Skokie, Ill.
Leo Talkov, Brookline, Mass.
Syrus Ephraim Tande, Navy
Irving B. Tapper, Cleveland, Ohio
James Blair Templeton, St. Louis, Mo.

Aung Than, Rangoon, Burma
Cornelia M. Thompson, St. Louis, Mo.
Robert Walter Thompson, San Pedro, Calif.
Wm. McClain Thompson, Jr., Pittsburgh, Pa.
Wm. Kenneth Thurmond, Ft. Worth, Texas
George Nicholas Trakas, Brooklyn, N. Y.
Roy Stanley Turk, Air Force
Myron George Turner, Navy
Robert Burns Underwood, Elmhurst, Ill.
Charles Joseph Vincent, Richmond, Va.
Nathan Wachtel, New York, N. Y.
Daniel Elmer Waite, Iowa City, Ia.
Donald Foote Wallace, Albany, N. Y.
Howard Leon Ward, Great Neck, N. Y.
Paul P. Weaver, Seattle, Wash.
Rudolph Milton Weber, Kansas City, Mo.
Joseph Benjamin Weeden, Palo Alto, Calif.
Carlos Weil, Drexel Hill, Pa.
W. Don West, Dallas, Texas
F. Gordon Westlake, Bozeman, Mont.
Elmer John White, Beaumont, Texas
F. B. Wiebusch, Richmond, Va.
Jarvis M. Williams, Kansas City, Mo.
Walter John Winterhoff, Tucson, Ariz.
Donald G. Wise, Chicago, Ill.
Henry Francis Wisniewski, Camden, N. J.
James Edward Woodard, Columbia, Tenn.
Gerald George Wright, Detroit, Mich.
Thomas Wai Sun Wu, San Francisco, Calif.
Harry Joseph Wunderlich, Navy
William Lloyd York, Cleveland, Ohio
Frederick A. Zulch, San Francisco, Calif.

In Absentia

John Speir Baird, Sydney, Australia
T. N. Chawla, Lucknow, India
Samuel Cripps, London, England
Campbell Harry Graham, Sydney, Australia
William Alan Grainger, Gordon, Australia
Robert Harris, Ashfield, Australia
Jacques Levignac, Paris, France
Everett Randall Magnus, Sydney, Australia
Motupalli Ganga Rao, Hydersbad, India
Antje Tallgren, Aarhus, Denmark
Hamish Thomson, London, England
Sven Gunnar Walden, Saltzjobaden, Sweden
John McFarlane Wark, Melbourne, Australia
William Norton Salter, Houston, Texas

Posthumously

Frank E. Dixon, Garden City, N. Y.

THE HONORARY FELLOWSHIPS

These were conferred upon President John A. Perkins, University of Delaware; United States Senator Lister Hill, Alabama; and United States Congressman John E. Fogarty, Rhode Island.

Citation

By

Philip E. Blackerby, Jr., Battle Creek, Mich.

It is a very real privilege to present, for Honorary Fellowship in the American College of Dentists, John Alanson Perkins, President of the University of Delaware. Long a leader in higher education and public administration, Dr. Perkins in recent years has also rendered a distinguished service to the public and to the dental profession in his capacity as Chairman of the Commission on the Survey of Dentistry. This monumental study of the current status and future needs of dental education, dental health, dental research, and dental practice, which was carried out under his able leadership and guidance, has been acclaimed as one of the most comprehensive and significant investigations of its kind ever conducted.

Before assuming his present position at the University of Delaware in 1950, Dr. Perkins served the State of Michigan with great distinction as state budget director, state controller, as professor of political science and assistant provost at the University of Michigan, and in many other capacities of a voluntary and extracurricular nature.

His numerous contributions to national and international interests of this country have included membership on the special committee on Inter-governmental Relations for the federal government, the Executive Board of UNESCO, President Eisenhower's fact-finding board in connection with the 1959 nation-wide steel strike, the 1960 White House Conference on Children and Youth, and the National Council of the Atlantic Union Committee. And in his own professional field, Dr. Perkins has been President of the American Society for Public Administration. During 1957-58, he served as Undersecretary of Health, Education, and Welfare for the federal

government, with the vast program of the Public Health Service included among his many important responsibilities.

Dentistry owes a great debt of gratitude to Dr. Perkins for his statesmanlike direction of the Survey of Dentistry, and for the time, effort and wise counsel which he contributed so generously to this large and complex undertaking that has such great import for the future of our profession.

Dr. Perkins, the American College of Dentists is deeply honored and privileged to confer upon you Honorary Fellowship in the College.

Citation

By

Harry Lyons, Richmond, Va.

I have the distinguished honor of presenting the Honorable Lister Hill, United States Senator from Alabama.

Senator Hill is recognized by everyone in the health science professions as one of mankind's greatest benefactors. His lifelong interests in health, his dedication to the cause of research in the health sciences, and his skill in the Congress mark him as a man who will surely be recorded in history high on the list of great figures in the realm of the health sciences.

President John F. Kennedy addressed Senator Hill on an occasion as follows: "I am sure that it is obvious to the entire membership of Congress that your great personal interest in the field of medicine and health and your tireless efforts in behalf of furthering medical science and in bringing the benefits of that science to the people of our country have made you the outstanding congressional leader in the field of medical legislation in the nation today."

Senator Hill enjoys a family background which prepared him admirably for his life's work. His paternal great grandfather and grandfather were ministers. His father was the South's foremost surgeon and the first to accomplish successful suturing of the human heart.

Senator Hill manifested great brilliance of mind at an early age. He was admitted to the University of Alabama at the age of sixteen and was graduated four years later with both baccalaureate and law degrees.

Senator Hill is a veteran of World War I. At the young age of 27 he was elected to the Congress. Re-elected to the House of Representatives seven times without opposition, he was then elected to the Senate in 1938 and has been re-elected to this body four times. He has been awarded seven honorary degrees and has been recognized by citations and awards for distinguished service by 52 organizations.

Senator Hill, more than any other person, is responsible for the provision of hospital facilities all over this country and for the establishment of the National Institute of Dental Research. These stand as monuments to his dedication to the health care needs of our people.

Senator Hill's legislative contributions in other fields such as Rural Housing, G.I. Bill of Rights, Rural Library Service, Transportation, Education, Rural Electrification, the Armed Forces, and the United Nations are in themselves of such monumental importance as to warrant citations. These indicate the breadth of his interests and the tremendous magnitude of his legislative competence.

We are honoring the dental profession and the American College of Dentists in appreciating Senator Hill for his life of service as evidenced by this ceremony.

Mr. President, I present Senator Lister Hill for the award of Honorary Fellowship in the American College of Dentists.

Citation

By

Harold Hillenbrand, Chicago, Ill.

John Edward Fogarty was born in 1913 in Rhode Island, the state which he has represented in the United States House of Representatives since 1940. The data which he supplies for the *Congressional Directory* and for *Who's Who in America* are immoderately modest in view of his outstanding leadership as a member of the Congress, particularly in the fields of health and welfare.

Dr. Fogarty, who received this title and the honorary degree of Doctor of Political Science from Providence College in 1946, indicates in his biography that he is a member, and former president, of the Bricklayers Union. Those who have the opportunity of trying to evade or comprise a reply to one of his direct questions during a

Congressional hearing have quickly realized that he still figuratively maintains his ability to handle "Irish Confetti" in a manner wholly professional.

As a member of the Appropriations Committee of the House of Representatives, and as chairman of its subcommittee responsible for public health and health research appropriations, Mr. Fogarty has rendered uncommon and outstanding service to the health professions of this country. This role has been recognized by the award, in 1957, of honorary membership in the American Dental Association and, today, he receives the same accolade from the American College of Dentists.

More than fifteen years ago, as a member of the House Naval Affairs Committee, Representative Fogarty actively supported the Navy Dental Bill which remains a model for such legislation today. In 1948, Mr. Fogarty was one of the principal supporters of the "National Dental Research Act" which established the National Institute of Dental Research. In May of this year, Mr. Fogarty participated in the dedication services of the new building for the Institute, surely the finest dental research facility anywhere in the world.

As Chairman of the House subcommittee, Representative Fogarty became an ardent proponent of preventive dentistry. He was chiefly responsible for substantial increase in Public Health Service funds for demonstration programs relating to fluoridation, the topical application of fluorides, the care of children, and the effective use of dental auxiliaries. In 1956, he led the efforts of the American Dental Association to increase funds for dental research to almost five million dollars. In 1956-1958 he provided leadership in the legislation to obtain four million dollars for the construction and equipment of the building for the National Institute of Dental Research.

In the last five years Mr. Fogarty, with his colleague Senator Lister Hill, has had the major roles in assisting the American Dental Association in expanding dental research appropriations from two million dollars in 1956 to nearly twenty million in 1962. Mr. Fogarty has also taken an active leadership role in efforts to improve public dental health programs at the state and local level, to provide federal grants-in-aid for dental and medical education, and his plan for grants-in-aid to dental and medical schools is the basis of the present administration's proposal now pending in both the House and Senate.

There is not time here to rehearse Mr. Fogarty's many other con-

tributions in the field of health and welfare, except to say that they are multifold.

To a devoted and distinguished member of the Congress, who has fought long and successfully in the battle to increase the level of health nationally and internationally, who has won the special gratitude of the dental profession for his recognition of its vital and proper role in the health of the American people, and who is acknowledged by all as a leader and statesman in the field of health, the American College of Dentists today bestows with appreciation and gratitude—honorary membership on John Edward Fogarty.

THE AWARDS

The William John Gies Award was given to Edgar D. Coolidge, Evanston, Ill., and Frank O. Alford, Charlotte, N. Car.

The Award of Merit was given to George Hoyt Whipple, Rochester, N. Y.

Citation

By

Robert G. Kesel, Chicago, Ill.

I am privileged to present for the William John Gies Award one of the dental profession's most respected members, Dr. Edgar D. Coolidge. His teaching, research, and authorship have made him renowned internationally. His integrity, dignity, and graciousness have endeared him to those who know him. His intellectual attributes have contributed to the advancement of dentistry as a discipline in science.

Dr. Coolidge was born and raised on a farm in Illinois. He was graduated from the Chicago College of Dental Surgery in 1906 and began a practice of dentistry in Chicago that continued for 54 years. His practice was combined with a career in teaching and research. In 1913 he was appointed Professor and Head of the Department of Materia Medica and Therapeutics at the newly reorganized University of Illinois College of Dentistry, a post he continued to fill until 1923. From 1927 to 1948 he occupied a similar position at his alma mater, now Loyola University Dental School in Chicago, and upon his retirement as Professor Emeritus in 1948, Loyola conferred upon him the honorary degree of Doctor of Laws.

While Dr. Coolidge maintained a busy and an oustanding practice, he has been a student all his life. In 1930 he earned a Master of Science degree from Northwestern University. The clinical and laboratory research that he conducted during the period did a great deal to quell the controversy about the pulpless tooth. He pioneered in placing endodontic practice on a sound and rational foundation.

Dr. Coolidge is the author of several widely used textbooks. He has made prolific contributions to the dental periodical literature. He was originally a country boy—one who came to the city and by the diligent developments of his talents attained accomplishments that have gained for him many deserved honors. The American College of Dentists itself will be honored in granting him this recognition.

Mr. President, I am pleased to present Dr. Edgar D. Coolidge for the William John Gies Award.

Citation

By

O. W. Brandhorst, St. Louis, Mo.

On behalf of the Board of Regents, I wish to present a citation recognizing the unusual services of Frank O. Alford, of Charlotte, North Carolina.

For many years he has served the College as Marshal, shouldering the many responsibilities associated with this assignment. Through his attention to the many details, we have been able to carry on the ceremonial procedures with dispatch and in a manner befitting the American College of Dentists.

Not only has Dr. Alford devoted himself to these and other College activities at section and national levels, but he has devoted himself over the years to the advancement of the profession, wherever and whenever the opportunity presented—at local, state, and national levels.

His constant willingness to serve, in his quiet and unselfish manner, sets a pattern well worth emulating in the profession.

Mr. President, the Board of Regents request that Dr. Alford's services to the profession and the American College of Dentists be recognized by presenting him on this occasion with the William John Gies Award.

Citation to George Hoyt Whipple

By

Harold C. Hodge, Rochester, N. Y.

Your great gifts have long been recognized.

First, as an administrator you organized and built the plant and brought together the faculty, the mortar and the men, to start and lead to a place of first rank the school you served as dean.

Second, as an investigator you received the Nobel Prize in 1934 for demonstrating the curative effect of liver in the treatment of pernicious anemia.

Third, as a teacher and professor of pathology you have led many young students and doctors into the realization of the necessity for accurate and critical observation, judgment, and interpretation.

Your insight into the needs of dentistry and your gift in recognizing ability in young people has made you in dental education, the father of teachers. Beginning in 1929 when it was evident that the training of that day did not equally prepare pre-dental students and pre-medical students to enter professional pre-clinical classes together, with the help of the Rockefeller Foundation, you offered opportunities to graduates in dentistry "to conduct research and to train prospective teachers, investigators and practitioners in the fundamental biological sciences underlying the practice of dentistry." Your three basic principles guided this unique experiment in dental education: 1) the training must broaden and deepen the biological background of graduates of dental schools, 2) their advanced study could lead toward the M.S. degree or the Ph.D. degree but not toward the M.D. degree, 3) the dental fellows should become members of a pre-clinical department. The 72 alumni of this training program came from 40 different dental schools, 24 in the United States, 16 in foreign countries. Forty-four dental graduates have received advanced degrees, 21 the M.S. degree, and 26 the Ph.D. degree. The leadership of this small group in dental education is evidenced by the twelve deans of dental schools, one director of a dental institute, ten directors of graduate training programs in dentistry, thirty-three professors, ten associate professors, eight assistant professors, seven in the public health service or other governmental positions, and nine men in private practice.

The great men of every age leave their permanent record in their

followers and their students. Dr. Whipple, you gave the best possible experience in medical sciences to dental students at the very beginning of their professional careers. The American College of Dentists honors itself by conferring on you its Award of Merit in recognition of your lasting contributions to dental education.

THE EVENING MEETING

Eight hundred guests were present at the dinner in the Grand Ballroom of the Bellevue-Stratford. The invocation was pronounced by the Reverend Paul A. White, Ardmore, Pa., Executive Secretary, Philadelphia Presbytery Homes, Inc.

George W. Teuscher, dean of Northwestern University Dental School, was introduced as toastmaster by President Edgar W. Swanson.

Introduction of Guests—Dr. Teuscher introduced The Honorable Lister Hill, U. S. Senator from Alabama; The Honorable John E. Fogarty, Congressman from Rhode Island; and President John A. Perkins, University of Delaware.

Dr. Teuscher introduced the immediate Past-President of the Federation Dentaire Internationale, Obed H. Moen, of Watertown, Wis., Dr. James Moloney, London, President of the American Dental Society of Europe, and Dr. Cyril de Vere Green, London, who represented the British Dental Association.

Mr. B. Duane Moen, Director of the Bureau of Economic Research and Statistics of the American Dental Association, was asked to introduce the guests from other countries. They were:

Dr. and Mrs. Bernardo Cupertino, Sao Paulo, Brazil. Dr. Cupertino is treasurer of the Sao Paulo Dental Society and the representative of that society at the meeting.

Mr. Albert Sythoff, The Hague, Netherlands, president of the company that prints the *International Dental Journal*; also Mr. John Hamburg, production manager of the company.

Dr. Ino Sciaky, Jerusalem, Israel, dean of the Hebrew University Dental School.

Dr. Julio Oscar Novoa, El Salvador, official representative of the Odontological Federation of Central America and Panama.

Dr. Teuscher introduced the officers of the American Dental Association, the officers and regents of the American College of Dentists, and the officers of the Philadelphia Section.

Dr. Teuscher also introduced one of the founders and organizers of the American College of Dentists, Albert L. Midgley, of Providence, Rhode Island.

Appreciation Award—President Edgar Swanson then asked that Otto W. Brandhorst come to the rostrum, where he was presented with a gift. Dr. Swanson remarked:

"Mr. Secretary, our program is so full that it does not afford me time to recount the many activities and accomplishments which you have attained in the span of 25 years as Secretary of the American College of Dentists, but we could not possibly let this anniversary go by without some recognition. We feel it is through your devotion, your loyalty, and your efficiency that the College has attained the position it holds today, not only nationally but internationally. We officers and regents of the year 1960-1961 hope you will accept this small gift as a token of our appreciation and esteem."

(Dr. Brandhorst was given a standing ovation as he accepted the gift from Mrs. Swanson: a combination clock, calendar, thermometer, and barometer. It was inscribed, "Presented to Dr. Otto W. Brandhorst, Philadelphia, October 15, 1961. In appreciation of 25 years of service as Secretary of the American College of Dentists.")

Dr. Brandhorst modestly expressed his appreciation.

The newly elected officers were installed by President Swanson.

President-elect	Philip E. Blackerby, Jr., Battle Creek, Mich.
Vice-President	Crawford A. McMurray, Ennis, Texas
Treasurer	Fritz A. Pierson, Lincoln, Neb.
Regents	Vincent A. Tagliarino, Louisville, Ky. (to fill the unexpired term of J. H. Springsted, deceased)
	Frank O. Alford, Charlotte, N. Car. (four year term)
	Stanley A. Lovestedt, Rochester, Minn. (four year term)

The gavel was handed to incoming President Henry A. Swanson, who asked former president Donald W. Gullett, Toronto, Canada, to present the *Service Key* of the College to retiring president Edgar W. Swanson. In part, Dr. Gullett said:

"The presentation of the service key to the retiring president is a time-honored custom of the College. As defined in the dictionary, a mace is a heavy, spiked club used as a war weapon. Long since, the mace has become a symbol of authority which is entrusted to the presiding officer during his term of office. It is fitting that the serv-

ice key which is presented to the president at the end of his term is a miniature of the College mace.

No man becomes president of this College until he has served a stringent apprenticeship. His fellowship, in the first place, denotes that he has served his profession well. Election to the Board of Regents means that there is a testing ground, and the office of president offers opportunity to exemplify those attributes which the man has developed over the years.

Dr. Swanson, the College has had a year of progress during your term. Your devotion to service is greatly appreciated and this service key signifies our appreciation for your effort. It is a great honor for me to have the privilege of recognizing you in presenting to you this key."

Dr. Swanson accepted the *Service Key* and expressed his sincere thanks.

Vice-President Crawford A. McMurray presided while President Henry A. Swanson read his Inaugural Address.

The speaker of the evening was Mr. J. Lewis Powell, M.E., Washington, D. C., who gave a unique presentation and talk on "Cave Man to Space Man."

The meeting was adjourned at 10:45 p.m.

The Humanities and Health Services

JOHN ALANSON PERKINS, A.B., A.M., Ph.D.

President, University of Delaware
Chairman, Commission on the Survey of Dentistry

It is a great privilege to be asked by your Regents to attend and speak before this Convocation of the American College of Dentists. This is but another opportunity of many which I have had in recent years to be associated with your important profession. It is a rare privilege for a layman to become so closely associated as I have been, owing to the Survey of Dentistry in the United States, with the aspirations, the problems, and the leadership of as closely knit a group as a great professional one is by nature. You might suppose that in this comprehensive survey of your profession that the subject of dental education was my primary concern and interest. Fascinating and complex as this subject naturally is to an educator, it quickly found its proper relationship to the other equally important objects of our inquiry—dental research, dental practice, and dental health.

Upon this personal side I would dwell for a moment. It may in a measure enlighten the general topic which the wise Dr. Brandhorst assigned me. He suggested that I should address you on the relationship of the liberal arts to the health professions, dentistry in particular. He was searching, out of kindness to all concerned, for some subject which would permit me by reason of my own specialized training to talk to men highly specialized in a quite different field and still enable me to elicit their interest and initial respect. My own undergraduate training was, generally speaking, in the liberal arts. My doctorate was taken in the broad and inexact areas of political science and public administration. While government *is* a specialized field of study, democracy by definition licenses all men upon reaching voting age, as competent in it. Some of your profession think that as dentists you are professionally threatened by invasion from physicians, dental technicians, hygienists and others. To a political scientist, yours is a secure professional haven indeed. By formal education as well as by reason of personal qualities of mind

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Address, Philadelphia Convocation, October 15, 1961.

—they are not all strength by any means—I have been evermore in my adult life practicing as a generalist. Time and again I have been drawn away from my specialty to investigate and subsequently shape a course of action or policy with respect to quasi-public or public activities. Involvement in state-wide planning, public finance, and budgeting, educational administration, settlement of labor disputes, public welfare legislation and health problems have been my experience. This experience adds up to knowing a little about a great variety of human problems, even scientific ones, and not knowing much in depth about any one of them. Such is a generalist, the product of a liberal education. What a contrast such a life presents to yours which I look upon with a certain longing and inevitable respect. All this by way of saying that it was quite a natural thing for me, once involved in the Survey of Dentistry, to be conjuring not only about your education but about such topics as the progress in practical prevention of dental disease, the more rapid and efficient dissemination of dental research findings, and the inclusion of preventive measures in private practice.

In all honesty, until today's happy assignment came along, I hadn't given more than occasional consideration to the liberal arts as they might be most pertinent to the species *homo sapiens dentibus.* Fortunately for you and me, among the more than 25 valuable, special studies published by the Commission on the Survey of Dentistry was Number 6, "Liberal Education and Dentistry," by Charles H. Russell. Let me commend it to you if you have not already read it. It appears in the *Educational Record* for January, 1960.

The truth is that the meaning of the phrase liberal arts, not to mention the subjects of study which comprise it, is very confused. As that vague phrase has related to dentistry over the past hundred years, it has not so much been a matter of studying certain subjects as it has been the amount of preliminary education a would-be dental student should have before beginning his professional training, whether as a preceptor of yesterday or as an enrollee today in a collegiate college of dentistry. As all here doubtless know, debates have raged over the last century about whether a candidate for dentistry should be a high school graduate, later whether he should have at least one year, subsequently two or three years in an undergraduate liberal arts college, or possibily earn the bachelor's degree before being admitted to professional training. These discussions brought

about certain definite objectives for such professional education. Advocates justified proposals to raise educational standards on the grounds that the change would contribute to one or more of the following: (1) professional competence, (2) citizenship, (3) activity in the local community, (4) social status for the dentist, and (5) personal improvement. The first four advantages were, it seems, most commonly called to attention. These virtues of an extensive preprofessional education were also pressed as contributing inevitably to the candidate's level of knowledge, or as proving his capacity for the rigors of dental school, or as ensuring greater competence in later professional practice. Incidentally, there was more than a little concern with the value to the profession and its enhanced status if dentists were civic and social leaders. There is not a thing wrong with this pragmatic emphasis, except that the idea of what a liberal education is has been given a rather narrow turn, so narrow almost as to miss the whole point. That point is that a liberal education according to the time honored concept, is to make a better individual —an individual more capable in every endeavor.

Let us consider a little further the term "liberal arts" and the liberally educated man. Our object shall be not so much to define as to catch the spirit of the term and its human product. In the English speaking world the liberal arts have for centuries been the main vehicles for the education of civilized leadership. Hence the founding of Harvard College—not a theological school, mind you, but a liberal arts one—when the puritan clergy were largely responsible for civil affairs as well as for man's soul. Hence, the ubiquity of the classical curriculum at Oxford and Cambridge Universities in the eighteenth century when the sons of the landed gentry and the squires attended these universities in spite of their then comparatively moribund state. Hence, the education of a considerable portion of the British Civil Servants yesterday and today in the Oxford Honor School of *Literae Humaniores* of "Greats" as this curriculum is popularly called. Also, the heart of this tradition of liberal art study is the profoundly held conviction that pure knowledge is not in itself liberalizing or necessarily educative at all. A man's studies should give him knowledge, yes, but more importantly, the power to think. His studies should familiarize him with what the great men have felt, have thought, have done.

The immediate usefulness of a subject should not be confused with

its value as an educator. Here is the tap root of the conflict which so commonly rages between vocational education and the liberal arts. Lawyers, physicians, and dentists have struggled over the extent to which the undergraduate courses taken by aspiring practitioners should be prescribed ones most likely to be immediately and professionally useful. In recent years these professions have increasingly, fortunately one may say, caught the spirit and sense of the liberal arts. The stress is now upon the more general contributions of preprofessional work. I quite agree with the authority already brought to your attention, Charles H. Russell, who writes: "To the extent that advocates of subsequent increases in entrance standards placed primary emphasis on their contribution to dental practice, even though they conceived that practice more broadly, they also failed to see the dentist in the larger role of the liberally educated person."

The liberally educated man should reveal—in his conversation, his letters, or his more formal communications—high intelligence, a liveliness and originality of mind, allying with his wide-ranging mind sheer horse sense. The outcome of a liberal education should be a man of character as well as brains. Many seers believe that T. S. Eliot is right in his work, *Notes Toward the Definition of Culture.* In it, he suggests, that the great majority of people, and I wonder if he would be so bold as to include some dentists, are not capable of intellectual cultivation to any significant degree. If this is true, then the character outcomes of a liberal education must bulk large in a people's or even a profession's desire for it.

At the risk of laboring the obvious, I should like to emphasize that the word "liberal" derives from the Latin word *liber,* meaning free. The phrase liberal arts in this sense means simply "the arts significant to a free man." For reasons I shall emphasize later, I would note now that a free man must know these arts if he is to be self-governing in either a profession or in the larger sense of the political state. If he is not self-governing in either domain, he obviously has lost his freedom, perhaps because he was lacking in both knowledge and character.

To be emphasized right here, however, is the fact that the liberal arts, the "arts becoming to a free man," have always included the sciences. Those in the professions such as medicine, dentistry, and engineering are not alone in forgetting that the sciences have always been among the liberal arts. The humanists, most of them for such

reasons as not truly understanding science or being jealous of its significance and progress in the modern age, are also prone to forget that as far back as the classical Greeks, the philosophers were also scientists. In the Middle Ages the liberal arts included arithmetic, geometry, and astronomy along with grammar, rhetoric, logic, and music. But to return to you present-day vocationalists. Scientific knowledge is indispensable to you. It is a vital underpinning to your professions. Because it is, you have pushed young novitiates so pragmatically toward greater scientific knowledge as to almost vitiate the larger, deeper, and more lasting contribution science can make to their education. Unfortunately, a widening breach has developed between what is thought of as scientific education and what is thought of as a liberal education.

This has been to the detriment of both. The more immediately useful a field is thought to be, the greater is the temptation to teach it simply as practical information. When that subject seems dull, the tendency is to compound the fault by making the teaching evermore down to earth. The biochemistry professor teaching pre-professional students or even pre-clinical dental students, is, I suspect, so busy insuring his students against gaps in their knowledge of this vast and complex field that information is about all that is taught. Little time remains to explain, to evaluate, and to criticize. The student is so busy accumulating facts, definitions, and formulae that he has no time to question, to digest, or to think critically. The high possibility offered by science study to demonstrate how each advance has exhibited the scope and the depth of imagination, the critical mind inquiring and logically reaching conclusions, is lost. To recover this loss would not only put the would-be dental or medical novitiate and his scientific studies into a renewed relationship to the liberal arts; it would make his science courses more meaningful, too! He would no longer proceed to his clinical courses simply stuffed with facts from ever thicker textbooks printed in ever smaller type, praising the Almighty that he is now *through* with science. Such thanksgiving, by good students too, has been given in my presence more than once. It is perfectly possible for a man to go through your comparatively long educational process, replete as it is with science courses, and not really understand science, a vital part of the liberal arts. He may simply have acquired, for the time being, information given in a series of discrete science courses.

If science courses for embryo dentists were taught broadly as well as in depth, truly in the spirit of the liberal arts, not only would the best possibilities of a liberal education be realized. More important for each of you, a dental profession based upon a built-in and dynamic science in the fullest sense of the word would be assured! Such dentists need not look suspiciously upon encroachments by those with mechanical skills.

So much for the establishment of a common background of the liberal arts and its relation to the dental profession. Permit me now to enumerate just a few of the larger problems of the dental profession, upon which your Survey Commission made recommendations. First, only 40 per cent of this naton's population receives what might be called adequate dental care. The American people, even those in the higher income brackets, evidently set a low priority on dental health. Second, our 90,000 practicing dentists are simply not enough to take care of the growing population, especially if they come to have an awakened desire for dental care. Third, many dentists are reluctant to adopt some of the demonstrably practical means of increasing their own productivity. Fourth, the prevention of dental disease or limiting its progression does not have a high priority among many practitioners. There are also a range of problems related to the governing of the profession extending from licensing to the adjudication of fee and other disputes between practitioner and patient. So much for a small sample.

Consider again if you will what already has been said concerning the liberal arts and character education. I told you earlier that I would return to the relationship of the liberal arts, and their high significance to character and a man who would be free both as a worker and as a citizen. I do so now. Freedom's continuance depends upon man's having the ability to run both his profession and his government in a responsible manner. Most of the problems before dentistry that cry for solution require men with more than technical skill! They require ever-more men imbued with the spirit of the liberal arts to such an extent that they make that spirit a way of life for themselves, their profession, and their nation. They must have the knowledge and the character to govern themselves to their profession in the public interest.

To mention government recalls that the Commission's findings and recommendations at many points would bring your profession

more closely into a juxaposition with governmental authority than heretofore. This was particularly true with respect to public health measures such as fluoridation, incremental care programs for children possibly with federal assistance for children of low income families. With respect to dental education, we foresee as inevitable that federal funds will be necessary for dental education and operational expenses of the schools, for new construction and remodeling, as well as for scholarships and loan funds for dental students. With respect to dental research, we need only remind ourselves of the basic role already played by the federal government to realize that if the Survey's recommendations for expanding and augmenting research are carried out, that the governmental role will doubtless grow rather than shrink. To a profession educated as I would have yours be in "the arts significant to a free man" we need not fear on the one hand, a profession overly dependent upon government or on the other, a profession apoplectic about cooperation with government. After all, government is elected by and responsible to dentists and *other free men*. It is now perhaps a good time at which to remind dentists that they must be concerned not only that they themselves are educated in the liberal arts, but that the liberal arts be made available and urged upon their fellow citizens as well!

Dentists are not the only highly specialized group in our society. Specialization is ever-more ubiquitous. Specialization has been one of the means that has helped western civilization so wonderfully to expand human knowledge. There is, therefore, a temptation, Arnold J. Toynbee rightly warns, to carry specialization to too great a length. This could be making too much of a good thing, and specialization is goaded along by the circumstances of international power politics. Now that technology and scientific knowledge may count more in victory than military prowess and administrative skill, governments and non-governmental organizations alike call for specialists. I should like to quote Toynbee again as to the futile consequences of our specialization. He says: "Any state or people that succumbs to this temptation seems likely to defeat its own purpose for even the disinterested pursuit of science becomes sterile if it runs in narrow ruts. Specialization, in particular branches of natural science, runs dry if it is cut off from its source in comprehensive and philosophical scientific thinking." I agree. Over-specialization will be detrimental to the very science that it has spawned. Moreover,

most of the difficult problems of the world, just as in your great profession, depend for solution not upon science and specialization but upon other qualities traditionally developed by the liberal arts.

The dental profession, whether it would save the natural teeth or play the free citizen-role, will educate itself in the liberal studies and do what it can as a leadership group to see that other specialists, whether of a recent or long-standing identity, are likewise educated in a manner and substance fit for free men.

President's Address

EDGAR W. SWANSON, D.D.S., M.S.D.
Chicago

It has been a distinct pleasure and an honor for me to have served as your President this past year, and my only regret is that in this short space of time I could not have done more toward the advancement of the efforts of the College.

There has never been a dearth of problems to challenge the intelligence, the curiosity, the interest, and the enthusiasm of the individual in dentistry nor of the dental society. There are more problems than any of us, individually or collectively, can hope to gather together in one place, or to live long enough to form intelligent opinions about their solutions. The number and kinds of questions which can and will be considered by an organization, such as the American College of Dentists, are dependent upon the caliber and interest of its membership and by the funds made available for the purpose.

We are an organization of dentists selected for the reason that we have demonstrated our ability to contribute outstandingly to the advancement of the dental profession and, therefore, to the welfare of the people whom the profession serves—selected and honored in the fervent hope that we will serve even more and with even greater attainment because of the opportunities to do so provided for us by fellowship in, and by virute of, the program of the American College of Dentists.

How are such advancements and attainments achieved?

Through committees;
Through special studies;
Through support of projects and studies by others;
Through cooperation with other groups;
Through cooperation with dental school faculties;
Through section activities; and
Through such meetings as here in Philadelphia.

Three important areas of dentistry have formed the tripod for the program of the American College of Dentists. First, the College has

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fostered and supported a stronger program of dental education; second, it has been a leader in the advancement of the dental literature; and third, it has lent its support by example and by open discussion to improve dental organizations, based on the principle that their existence cannot and must not be a selfish one, but one primarily for the purpose of improving the dental health of the society which gives license to its fellows to practice dentistry.

Dental education finds itself in a dilemma. The recently published survey, *Dentistry in the United States,* recommends virtually doubling the number of dental schools in the United States by 1975. Should the present schools and their universities support such a recommendation? Should the American College of Dentists support it?

The College has been effective in improving the dental literature, but it must continue this effort and vigilance if the present gains are to be maintained and new ones are to be realized.

By example and by open discussion the American College of Dentists has urged the participation of dental organizations in programs designed to honestly and effectively improve the dental health of the nation. The College has been a staunch advocate for fluoridation of the public water supplies and has pointedly discussed the urgency of dental organizations becoming actively involved in the problems associated with providing more and better care to the public.

These are but a few of the things which have engaged and which will continue to engage the attention and the efforts of the American College of Dentists. But it is for all of us to remember that the College is *you;* it is not just the member at your right or your left—it is *you.* And if the College is to continue to justify its existence and its growth, you will have to do more than just pay your dues. You will have to give of your time, thought, and efforts to work for the goals and the objectives of the College. Anything less than this will not do justice to the person you are.

I wish once again to express to you my gratitude for the high honor which the College has bestowed upon me in having selected me as its President.

The Inaugural Address

HENRY A. SWANSON, D.D.S.
Washington, D. C.

I come before you this evening with a sense of elation for the honor afforded me to serve as President of this outstanding organization, The American College of Dentists, yet with considerable humility for I realize the importance of its objectives and the responsibility of what these objectives imply. The College is strong because of its basic concept of organization, and its officers and all of its Fellows are charged with the responsibility of maintaining and, yes, advancing this concept. Fellows are elected because they were considered meritorious, having rendered superior service to the profession, to their societies, to their communities, and in fact, to every cause that advances the health of people everywhere. Never let it be said that any Fellow upon election to the College, loses sight of this responsibility of the profession or ceases to support actively programs for the advancement of health services.

In forty-one years as an organization, the College has proven the hopes and beliefs of its Founders that "there was need for an organization that would be imbued with the highest ideals of the profession and would lend its influence to every movement having for its purpose the advancement of professional objectives and the betterment of dental service to humanity."

As your President, I have the honor of addressing you briefly on a theme which consists of a three-letter word, *WHY*—W H Y—the "why" of dentistry. This appears to be a peculiar title for an inaugural address, but there is much contained in the word "why" which is not new in our philosophy but which needs to be reiterated from time to time so that we do not lose sight of the basic concept of our profession.

A little child's inquiring mind uses the term "why" to satisfy an inner urge to obtain answers that have either escaped it or with which it has had no previous exposure, or for the plain reasoning of curiosity. In a child it can be annoying at times for those to whom

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it is made, because of a lack of knowledge that will satisfactorily answer the inquiry. The child's "why" is not too much of what I have in mind.

The "why" of dentistry is not always answerable, but it is not from a lack of knowledge but rather in the interpretation and the application of such knowledge. Dentistry's "why" then has a fundamental background and it is a concept to which a profession owes its existence: by demanding of its members total acceptance of definite principles, by demanding adherence to well established laws of procedures, by demanding technical knowledge, and by demanding a professional dedication. All of this definitely within the field of health but not necessarily limited thereto.

What is this concept of dentistry that demands so much of its people? One simple word describes it, that of *service*. Service which is rendered with truth, service rendered with compassion, and service with a sense of morality. This then becomes a philosophical problem for it is a problem of meaning. Its answer is not a statement of fact, but an interpretation of the word, especially the pursuit of its implication. What is meant by service? Webster defines the term in relation to the professions as, "Any result of useful labor which does not produce a tangible commodity."

Service then can be considered as a benefit which a person renders to another. Personal service between dentist and patient is foremost in our thoughts and is the bulwark on which we take our position as a profession. This fundamental fact governs the whole concept, and any extensions or deviations broaden our "why."

Dentistry is a health service and its ministrations are directed within this field. Agreed that its field is somewhat circumscribed it has nevertheless a definite relationship with the total health of people. Certain significant changes have been gradually occurring within the field of practice during the past few years which must have a distinct effect on the future of the profession. One important change has been the weighing of the problems of the health of the mouth more realistically in relation to the body as a whole. The life history of the teeth and oral tissues and the mechanisms concerned require detailed knowledge of the total organism, and it is important to know how the mouth is influenced by the related phenomena. Adversely, how is the body influenced by the oral situation?

Dentistry is quite independent in its approach when dealing with

its many problems of education, dental practice, dental health, and dental research. All the procedures that are necessary to promote, to establish, to operate, and, yes, to finance within these four fields are a very important phase of *service,* and the profession's obligation becomes more acute each year. Dental service is based on the premise that a need exists which requires one who is professionally qualified through educational preparation, who has a development of skill and intellectual effort, a sense of moral obligation, a social responsibility, and an inherent sensitivity for the patients' welfare.

Any philosophy that the dental profession has adopted or professes to adopt must have service as the basis for its continuation. Without this we can easily become relegated to the status of commercialism, and our profession is in jeopardy.

The increase in population and the consequent growth of the profession has assumed such proportions that dental service today encompasses much more than the individualistic relationship; we are faced with problems national in scope, dealing with the dental needs of all the people. There has been much discussion concerning the social responsibility of the dental profession, with the apparent connotation that we have disregarded its major implications. There may be some truth to the latter, but I am firmly convinced that it is not because of a lack of interest but rather lack of understanding as to how this can or should be accomplished. In our daily practices our contacts with social problems are in most cases very limited, and unless we are actually faced with such problems it becomes very easy to ignore them. Because of this broadening concept our dental leaders, several years ago, envisioned the need for a survey of dentistry of such magnitude that every phase would be covered. It was hoped that in studying and evaluating the facts, such a survey would develop recommendations upon which the profession might have a basis for self appraisal, for corrective measures, and for future development. The *Survey of Dentistry* is the result of that bold decision of our leaders and we have before us a master document from which we cannot escape. We must in our service to the profession and to the people be forthright and honest as we search for answers and solutions.

The Survey collected and stated facts and conjectures concerning the past, present, and future of dentistry. This broad-based report is the result of two years of effort by a representative group from the

field of education, from the dental profession, and from groups of varied interests. The coverage is all inclusive, with no particular area given precedence over another, so that it must be considered in its entirety if and when solutions are considered.

The report is a document which denotes the need for much service—service that must be rendered unstintingly, unhesitatingly, and with a dedication that is demanding of all in the profession and those associated with us. Those of you who had the opportunity to participate in the panel discussion this morning, and those who heard the discussion, now realize the enormity of the problem of providing dental health care for the American people.

I take this opportunity to express to the moderator, Dr. Hillenbrand, and to all those who participated, my sincere appreciation for an excellent meeting. May the knowledge we have gained be an instrument for service and an incentive for the continued advancement of health care for all humanity.

Many of us came into dentistry when its philosophy was simple of interpretation and was based largely on technical considerations. As the years have passed we have become scientifically and socially minded for reasons well understood; our professional concept of dental service has broadened and enlarged. Now consideration must be given to the needs of people in their total health problem, rather than to the individual demands of people which have been our daily occupation.

Percy Phillips in a recent address on the "Prospective for Tomorrow's Health Goal" stated, ". . . we should consider total health as the recognized objective of social man and to reflect on the challenging direction the profession of dentistry must authoritatively contemplate as the proper course to adopt in the years ahead. The basic challenge lies in the problem area of expanding quality dental health service to more people in a changing national philosophy."

Briefly, what is this national philosophy and how has it changed? It is a known fact that in every age some advances occur which should be for improvement. The old people look with misgivings on some of these innovations while the young people look with pity on the past. Progress is always accompanied by criticisms from those who prefer the status quo, for any change interferes with their mode of life and living.

In a recent article, Joseph Wood Krutch stated that "welfare is

the key word of our time. What too many men seem to desire is not virtue or knowledge or justice but welfare. To the majority the word sums up the principle object of government and, indeed, of all social institutions."

He goes on to say that if an eighteenth century philosopher was asked what the principle aim of government is, he would have stated that our Constitution grants us "Life, liberty and the pursuit of happiness." Today that does not appear to be entirely satisfactory to most people. They do not reject it, but consider it something less than enough. The addition of "welfare" seems to be the legitimate aim of government which the people are most willing to accept. This then is a changing national philosophy which we must recognize regardless of whether we agree or disagree with it.

The *Survey of Dentistry* has recognized the overall need of dental service for our people. Does all this indicate that there will be a change in our philosophy, our concept and our "why"? If so, then we can no longer maintain a status quo but must be prepared to take a stand which is morally right and which does not place dentistry in a militant position of resisting, but rather in one of defending progressive changes which will increase our basic concept of the best service. Service is the keynote, and any changes must maintain that fundamental principle.

What has this to do with the American College of Dentists? The College is not just another group; it is something specal for its members are elected to Fellowship because they have rendered superior service as professional people. The College has stated objectives and because of those objectives it is a working organization, prepared and ready to serve wherever and whenever the occasion arises. Its Committees are in continuous study of current problems, and the knowledge gained from such activities is made available to those who have positive responsibility for action.

We are not the body politic, responsible for decisions that must be made nor for the policies that should be adopted, but as a group of dedicated professional men and women we do have responsibilities of supporting such decisions and policies. Further, as individuals we have a personal responsibility in the selection of those who are to represent us in all deliberations and in all administrative activities within the field of organized dentistry.

Most of you are vitally interested in dental affairs at a local level

and many of you serve the profession at the national level so that your abilities are utilized in the services that must be rendered.

Because of this you are recognized as leaders within the profession. The College, desiring to capitalize on this wealth of potential workers, set up a section structure within each state so that it might more readily avail itself of your services.

Our Bylaws state: "The function of the Sections is to carry on the activities and to promote the purposes and objectives of the College at the local level."

Leadership is our birthright and our objectives are a measure of our ideals and standards. Willard Fleming, in his inaugural address as President of the College in 1951, had this to say which bears repeating: "Leadership in the dental profession has characterized our actions, and expediency has rarely taken precedence over the principles of right action. In addition to leadership, the College serves the profession at times as a catalyzer to speed up certain actions and progressive development, and again as a governor to control too hasty action. One of its most important functions is to initiate and contribute thoughtful studies of various problems through the action of its nationally constituted Committees."

I would like to go one step farther and say that our Sections today are equally important for they are a most formidable group whose activities and service, at a local level, are as important as any of the functions, actions, and services of our national committees.

Your participation in your Section activities is definitely a service to be rendered and the more that is channeled in this direction, the more effective the Section will be in its operation. No College officer can tell you what to do, but I wish I had the ability to ignite the spark of your enthusiasm and then fan it into a flame so great that your Section would be stimulated to project a vital program of constructive service.

I have two definite objectives for this next year and I call upon each of you and every Fellow of the College for the support of that endeavor. First is the organization of our Sections so that they will be a very positive asset in the determination of the advances in dentistry that will most definitely occur. Secondly, while our services to our own people is a foremost objective there is great need for services in foreign areas which can be helpful to our country and international peace. There are many dedicated dentists who have given

much in the initiation of such dental programs and I hope we can, this year, think clearly and conscientiously of what might be possible to advance the theme of "International Friendship."

The *Why* of dentistry is *Service*: the service you render to your patients, that which is rendered to the profession, that which is rendered to yourself. A dedicated professional person must ever keep in the forefront of his mind that he has been prepared for this role of service and that service rules his life. In a sense it is giving of yourself to others. The art of giving encompasses many areas. Emerson said it well: "Rings and jewels are not gifts, but apologies for gifts. The only true gift is a portion of thyself." Someone else has said that we give of ourselves when:

> "We give gifts of the heart: love, kindness, joy, understanding sympathy, tolerance, forgiveness . . .
>
> —we give gifts of the mind: ideas, dreams, purposes, ideals, principles, plans, inventions, projects, poetry . . .
>
> —we give gifts of the spirit: prayer, vision, beauty, aspiration, peace, faith . . .
>
> —we give the gift of time: when we are minute builders of more abundant living for others . . .
>
> —we give the gift of words: encouragement, inspiration, guidance . . .
>
> —we should give our community a good man, our home a devoted husband and father, our country a loyal citizen.
>
> The finest gift a man can give to his age and time is the gift of a constructive and creative life."

MINUTES OF THE MEETINGS OF THE BOARD OF REGENTS

October 13, 14, and 18, 1961, Philadelphia

First Meeting

The Board of Regents of the American College of Dentists convened in the Bellevue-Stratford Hotel, Philadelphia, on Friday, October 13, 1961, at 9:00 a.m. Thirteen members were present. President Edgar W. Swanson presided.

The Board observed a period of silence in memory of Treasurer William N. Hodgkin and Regent James H. Springsted who died since the last meeting of the Board.

Minutes of the meeting of February 5, 1961, in Chicago, were approved as submitted by mail. Report on Minutes was received.

Reports of Officers and Regents on various activities of the College were received.

The Treasurer's report, presented by the Secretary, showed assets and current funds in the bank totaled $95,817.96. Report was approved.

The Secretary reported on the ad-interim mail ballots taken since the February meeting. This was approved. He also reported the deaths of Fellows since the Los Angeles Convocation. (These appear in the report of the Necrology Committee as recorded in the minutes of the Convocation elsewhere in this issue.)

Unfinished business: H. A. Swanson and C. A. McMurray reported on the development and apparent success of "Operation Bookshelf." This was a project whereby books and periodicals collected from dentists were flown by the U. S. Air Force to countries where such material was needed.

The Secretary reported that the Exchange Fellowship (with Great Britain) would be activated shortly.

New business: Joseph E. Ewing, Philadelphia, was designated the organist of the College.

These Minutes have been compiled and abbreviated by the Secretary, O. W. Brandhorst. The detailed Minutes are on file in the Central Office.

Second Meeting

This afternoon meeting convened at 1:00 p.m. with Edgar W. Swanson presiding and thirteen Board members present.

This meeting was devoted mostly to hearing the reports of Committees, read either by the respective chairmen or a committee member. Discussion followed each report. The reports, together with actions taken, will be presented in forthcoming numbers of the *ACD Reporter.*

Third Meeting

The evening meeting convened at 7:30 p.m. and was adjourned at 10:00 p.m. Edgar W. Swanson presided with twelve Board members present.

The Board voted to hold its Spring meeting in the Central Office, St. Louis, in March, instead of Chicago as formerly.

President-elect Henry A. Swanson outlined his plans for the October 28, 1962, Miami Beach Convocation. He stated that the theme for the meeting would be "International Friendship," and that the program would be slanted toward Latin American relations.

The Ovid Bell Press, Inc., Fulton, Missouri, again was selected as the printing establishment for the JOURNAL.

The budget for 1961-1962 was presented and the various items discussed. (Action on the budget was taken at a subsequent meeting.)

Fourth and Fifth Meetings

This all-day meeting on Saturday was devoted to a discussion of some of the broader problems of the College and a consideration of certain aspects of College activities.

Annual meeting: The Board recognized that the traditional one-day meetings of the College have been "heavy" and "tight," and that there was need for more time to discuss and present the many interests of the College. It was decided that additional time should be arranged on the Saturday afternoon prior to the Sunday Convocation, if meeting facilities could be arranged. The Secretary was delegated to make such arrangements if possible.

Nominations for Fellowship: The present methods and procedures for nominating were reviewed. There were no material changes agreed on.

Section activities: President-elect Henry A. Swanson elaborated on this objective of the College for next year and outlined plans for greater activities by the Sections. In support thereof, it was decided to call a meeting of representatives of the Sections for the promotion of this effort. Each Section will be asked to send a representative to this meeting; travel and hotel expenses will be assumed by the College.

Survey of Dentistry: The interest of the College in this undertaking is well known. Further attention by the College to the Survey recommendations and what may be developed regarding them will be continued. The discussion indicated that wide interest in the Survey findings was being shown.

ACD Lectureship: It was decided to continue the lectureship program on the assumption that certain difficulties can be overcome. Further consideration will be given at the Spring meeting of the Board.

Institute of Graduate Study: The Board approved, in principle, the plans suggested by the ad hoc committee of the Committee on Research as contained in their current report. Details will be discussed and developed during the year ahead.

Sixth Meeting

The first meeting of the new Board was held on Tuesday morning, October 17, from 8:00 to 9:00 a.m. President Henry A. Swanson presided; fourteen members were present.

The new members of the Board were introduced. President Swanson outlined his program for the year ahead, stressing increased Section activities. He discussed plans to further the theme of the Miami Beach Convocation—"International Friendship." He announced his committee appointments, which were approved.

Secretary Brandhorst expressed his appreciation for the gift presented him at the Sunday evening meeting. He also read a letter of appreciation from George S. Easton, the retiring Vice-President.

John E. Gurley was designated Historian of the College for the ensuing year.

The Secretary was instructed to write letters of appreciation for the service rendered to the retiring officers, and to the Philadelphia Section for its gracious cooperation during the Convocation.

William N. Hodgkin

1890-1961

On September 7, 1961 the dental profession, and the American College of Dentists in particular, was saddened by the loss of its beloved and respected Fellow, William Newton Hodgkin.

Dr. Hodgkin was born at Warrenton, Virginia, on December 18, 1890, the son of James O. and Roberta D. Hodgkin.

His great-uncle, Dr. James B. Hodgkin, served on the faculty of the Baltimore College of Dental Surgery and both his father, Dr. James O. Hodgkin, and his uncle, Dr. Frank C. Hodgkin, practiced dentistry in Warrenton. Thus it was natural and fitting that Dr. Hodgkin and his brother, James O. Hodgkin, Jr., shared their interest and chose to enter the dental profession.

Upon graduation from the University College of Medicine, the present Medical College of Virginia, in 1912, Dr. Hodgkin began practice with his father and brother in his home town of Warrenton. In 1949, Dr. Hodgkin's nephew, James O. Hodgkin, III, joined them in practice, making 84 continuous years to date that the Hodgkin family has cared for the dental needs of the people of Fauquier and surrounding counties.

Dr. Hodgkin married the former Bertie Miley Beard of Lexington, Virginia, and had one adopted daughter, Carol B. Miller.

Dr. Hodgkin's was indeed a life lived in service and dedication to the profession, to his patients, and to his community. Though he was repeatedly honored by the profession, because of his inherent modesty it was difficult to learn of his attainments from his own lips. Surely it is worthy of note that he served his profession as President of the Virginia State Dental Association, with twenty years membership on the Virginia State Board of Dental Examiners, six years on the Council on Legislation of the American Dental Association, twelve years on the Council on Dental Education of the American Dental Association, over thirty years as member of the House of Delegates of the American Dental Association, eight years

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This obituary was written for the JOURNAL, at the request of Secretary Brandhorst, by Mrs. Barbara Fisher of Warrenton, Virginia. Mrs. Fisher was Dr. Hodgkin's secretary.

on the Board of Visitors of the Medical College of Virginia, and President and Regent of the American College of Dentists. His many friends throughout the nation deplored the compelling circumstances which precluded his being nominated for the presidency of the American Dental Association.

Endowed with a warm and sympathetic nature, as well as unusual mental capacity, his wise counsel was sought by every organization with which he was associated. It was because of his fine Christian character and sterling qualities of leadership that he was able to make such outstanding contributions to American dentistry.

Dr. Hodgkin possessed a keen and searching interest in history and was a recognized authority in the area of dental and Virginia history. For many years under the auspices of the Virginia State Dental Association he had carried on research looking to the publishing of a History of Dentistry in Virginia. Though this project had not come to fruition, he had published many papers on Virginia dental history.

In addition to serving his profession, Dr. Hodgkin gave generously of his time and abilities in his community as scoutmaster, vestryman, town councilman and bank director.

One of Dr. Hodgkin's favorite prayers was the one which goes—

"O Master, grant that I may not so much seek
To be consoled as to console
To be understood as to understand
To be loved as to love
For
It is in giving that we receive
It is in forgiving that we are pardoned
And it is in dying that we are born to Eternal Life"

Thus it was that he lived his life consoling, understanding, loving, giving, and forgiving. Surely this explains the love and admiration that all who knew him felt for him. Warrenton and the world are better places because Bill Hodgkin lived and worked among us.

American College of Dentists

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Book Reviews

WORLD DIRECTORY OF DENTAL SCHOOLS. World Health Organization, Geneva, 1961. 288 pp. Price: 1.5s., $5.00, or Sw. fr. 15.

The adequacy of present dental care and the problems implicit in anticipating, and planning to meet, future needs in that field have been studied in many individual countries in recent years. Now, for the first time, WHO has made available a compilation of the basic data, in its *World Directory of Dental Schools,* just published in a format similar to that of its *World Directory of Medical Schools.*

An important trend discernible from this directory is the increasing emphasis on public health dentistry and preventive dentistry in dental education. Of the 70 countries listed in the Directory, 21 report public health courses in their dental schools and 21 report courses in preventive dentistry. Only 8 countries appear in both lists. Not included in these figures are courses whose content may well overlap with public health or preventive dentistry, such as "epidemiology and statistics," "social hygiene," and the like. It is interesting to note that only 8 of the 21 nations reporting public health courses, and only 4 of those reporting preventive dentistry courses, are European, reflecting perhaps a less urgent need in the European nations because of a more favourable ratio of professional dental personnel to population—or perhaps merely a more conservative and a more traditional approach to dental training.

The ratio of registered dentists to population, given in the Directory for each country, serves a useful purpose as a crude quantitative measure of the adequacy of dental care and as a starting point for the public health administrator attempting to determine the optimum ratio for his country. Many factors will affect this determination. Among them are the extent to which available personnel are used in the various forms of what has been broadly termed "social dentistry"; the degree of utilization of dental auxiliary personnel; and the quantity and quality of dental research and its application to the prevention of dental disease. It is precisely because public health dentistry has a large part to play in each of these areas that recognition of its importance in dental schools is growing. The Directory offers no data on dental auxiliary personnel or on dental research; but it is hoped that such data may eventually become available and be incorporated in later editions.

It would be rash indeed to attempt to draw conclusions from, or base predictions on, the admittedly incomplete material made available in the Directory. Terminology is still unstandardized: even a cursory inspection reveals that there is little common ground (other than the function they perform) between the "secondary" or "assistant" dental practitioners, or the unregistered and presumably unqualified ones, still found in some countries, and the physician-dentists of other countries. Methods of collecting data are far from comparable: even the number of qualified dental practitioners given for some countries represents only an estimate, because of varying registration requirements. In countries that have no provision for separate registration of physicians who may practise dentistry as a specialty, the figures include as dentists only those so registered or

those who belong to a professional dental association, and will therefore be too low. Moreover, the tabulation gives no indication of the number engaged in actual treatment of patients, as against those who have retired from active practise or who are engaged in administrative work, research, or teaching. Such a breakdown of the statistics is not yet available; but clearly, the more advanced a nation's dental public health programme, the more extensive its training facilities, and the higher the standards of its dental schools, the more numerous will be these "exemptions" from the statistics on registered dentists.

Nevertheless, the statistics gathered in the Directory, taken together with the descriptions of dental education in the various countries, afford raw material for further analysis, as well as a yardstick against which future progress can be measured in later editions. There are few surprises here; as with the data given in the WHO *World Directory of Medical Schools*, the magnitude of the disparity between the nations of South-East Asia at one extreme and those of Europe and North America at the other is vividly brought home. Even in Europe and North America, it is apparent that no nation has achieved a level of dental care that is fully adequate to the need or the demand—at best one can speak only in terms of relative adequacy. Some countries that seemed to be within sight of such relative adequacy less than a generation ago find themselves losing ground today as their populations increase at a rate that outstrips their professional training facilities. Moreover, even if a nation succeeds in increasing its production of professional dental personnel in proportion to the population, the problem of distribution of the needed manpower is a knotty one in the social context of many countries.

Dental public health administrators and officials of dental schools will be especially interested in correlating the increase in their populations with the current and expected increment in their professional dental personnel, as a help in anticipating and planning to meet future needs. Analysis shows that as dental schools raise their standards and introduce more selective admission procedures, some countries may find it difficult to maintain their present favourable ratios and will probably look to the factors already mentioned—preventive dentistry, social dentistry, utilization of auxiliary personnel, and dental research—for improvement of dental care. But for many countries the problem will perhaps for some time continue to be how to expand existing institutions for professional dental training and create new ones: thus at the XIIth International Dental Congress, held in Rome in 1957, Sweden and Denmark reported twice the number of applicants that could be accepted in their dental schools, Norway three times the number, and Finland ten times. It is significant that, of the 276 dental schools in all countries for which the Directory reports the date of foundation, 91, or nearly one-third, were established within the past twenty years. Among other countries shown by the Directory to be engaged in a determined drive to increase the number, as well as the quality, of dentists is the USSR, which reports no less than 16 new dental schools founded in the past decade (12 of them within the space of two years) as against half that number in the three preceding decades combined.

Certain other trends in dental education, which have important implications for the quality of future dental care throughout the world, emerge from the descriptions of dental education in the various countries, although many more data are needed before the significance of these trends can be properly evaluated. One is the tendency for dental schools to be set up as independent faculties rather than as departments within a medical faculty. Both systems have their

proponents within the dental profession, but the tide seems to be running in favour of the independent dentistry faculty (although often with some affiliation with a medical school), especially in the non-European countries, in spite of the centuries-long history of dentistry as a medical specialty. Of the countries reporting on this point in the Directory, 40 (only 7 of them European) have separate dentistry faculties, whereas only 21 (13 of them European) have dental schools that form part of a medical faculty. In 4 European and 3 non-European countries there are examples of both systems. In this connexion it may be noted that France, where the private dental schools are set up as independent faculties and the State dental schools are incorporated into medical faculties, reported at the XIIth International Dental Congress a strong current of opinion in favour of a uniform system of independent dental faculties.

Nevertheless, as standards of dental education are raised, the prospective dental surgeon everywhere spends more and more of his time on general medical education, often sharing many of his classes with medical school students. Only two or three countries require, for the dental surgeon, the period of internship that has become almost universal for medical school graduates, and there seems to be little tendency in other parts of the world to follow the example of European nations such as Austria and Italy, which require a medical degree as a preliminary to admission to a dental school. But countries that have had shorter dental training programmes on a lower professional level, often designed to meet emergency needs, are discontinuing them. Thus the USSR is increasing enrolments in stomatological institutes and faculties for graduate physicians and decreasing enrolments in the non-graduate schools of dentistry, with the intention of eventually discontinuing the latter; and Yugoslavia, although not requiring a medical degree, has almost completely eliminated "vocational" dental schools.

Finally, one may point to a marked tendency among dental schools in recent years to absorb into the dentistry curriculum proper what was formerly termed "predental" work. More courses in the applied biological sciences are found throughout the average four-year dental curriculum, and the student begins clinical dental work earlier, so that the practical application of the basic sciences to dentistry receives more emphasis. This parallels recent trends that are found in the medical curriculum in many countries.

(This review, under the title "Trends in Dental Education," appeared in the *WHO Chronicle*, 15:338-43, Sept. 1961. The tables and graph are not reprinted.)

ORAL PHYSIOLOGY. By Sidney I. Silverman, B.S., D.D.S. 523 pp. St. Louis: C. V. Mosby Co., 1961. $15.00.

Considering the exceptionally broad scope of this book, the depth of the discussions is commendable. The author's expressed intention is "to abstract the principles of physiologic activity in the oral structures and to relate these processes to normal growth and development, to pathologic processes . . . and to diagnostic and therapeutic procedures." This aim has been accomplished.

The areas covered are many and diversified. Part I is a broad treatment of the structure and function of major tissues and organs and their relation to clinical dentistry. Included are discussions of cell structure and recent methods of studying cells; the circulatory system, its function and some of its disorders; the histology and pathology of epithelium, particularly oral epithelium; the structure, function, and disorders of the central nervous system and the autonomic nervous system; the functions of the cranial nerves; the psychology of behavior

and dental treatment of disturbed patients; the histology, function, and diseases of muscles; the histology, chemistry, and diseases of bone, and the pathology of joints.

Part II treats of the functional anatomy of maxillofacial structures. Included are discussions of growth and development; vertical dimension; occlusion; respiration; speech as it concerns the production of sound symbols, and speech disorders associated with pathosis in the maxillofacial structures; posture and gait and their relationship to occlusion.

Part III discusses the clinical application of physiology to different age groups: childhood, adulthood, and aging. In the discussion of childhood, areas covered include development and function in the prenatal period, infancy, early and late childhood, and dental treatment for children with such handicaps as anodontia, cleft palate, and neuromuscular disorders; in adulthood, among other topics touched upon are oral diseases resulting from blood, nutritional, or endocrine disorders, infections, and tumors; in the aging, attention is given to the biological and psychological problems in prosthodontics, to diseases, and to nutrition.

The author writes from the viewpoint of a comparative anatomist as well as from the viewpoint of a dentist. The introduction of some concepts of the evolutionary development of cells, of the nervous system, of the functions of sight and hearing, and a brief discussion of the evolutionary development of the skull, with some of the classic illustrations of Gregory, give added interest to the text and extend the background of the reader.

The book was not intended to, and does not, duplicate textbooks of basic physiology. It is a survey of, and an integration of, numerous areas of basic biological science and clinical dentistry.

While some readers may wish for more extensive coverage of one or more areas of their special interests, I believe it will be agreed that Dr. Silverman (College of Dentistry, New York University) has done good work in writing an informative and interesting book, one well worth the time and effort of studying.

Dorothy Permar, Columbus, Ohio

APPLIED DENTAL ANATOMY. By Nicholas J. Brescia, D.D.S., M.S. 212 pp. St. Louis: C. V. Mosby Co. 1961. $7.50.

This compact book of dental anatomy is intended for beginning students in dentistry. The author (Chicago College of Dental Surgery) has tried, with commendable success, to associate the basic anatomic facts with a understanding of some of the clinical procedures which the student will encounter at a later time in his clinic experiences.

In addition to descriptions of the individual permanent and deciduous teeth, there are included chapters treating of the periodontium, the alveolar process, the physiology of occlusion, and the comparative anatomy of the jaw complex of eutherian mammals.

Well does the writer of any textbook know that it is a difficult task to maintain a mid-position between over-amplification and under-explanation. For the beginning student, the one fault fogs the view as much as the other. In this book the author seems at times to have erred on the side of under-explanation, and to have assumed a background not usually possessed by beginning dental students. While learning is rapid in such a group of students, the teaching of

tooth morphology should start at the basic level exemplified by the statement, "*This* is a tooth."

This book would be improved by the addition of good illustrations of each tooth and by clearly labelled drawings illustrating the principal grooves, ridges, and cusps of individual teeth. With adequate illustrations the learning of tooth morphology could be accomplished with a saving of both time and effort.

Clear labelling of the good illustrations of the principal fibers of the periodontal ligament, of the stages of tooth eruption, and of supporting tissues showing inflammation and pathologic destruction, would also result in the quick conveyance of a clear impression of these structures. In the absence of such labelling, only those readers already familiar with the structures represented can readily interpret the illustrations.

The author's stated purpose of correcting and clarifying the nomenclature in dental anatomy, and of eliminating the colloquialisms and jargon, is a laudible undertaking. The fact that some of us might quarrel, in a friendly fashion, with his seeming lack of clear nomenclatural discrimination among such structures as grooves, fissures, and the shallow developmental depressions found on the labial surfaces of maxillary first incisors simply points up the need for thorough consideration of nomenclature by dental morphologists.

The material dealing with the periodontium, comparative anatomy, the alveolar process, and the physiology of occlusion is well presented for the use of the beginning student. Accompanied by comprehensive lectures on tooth morphology this textbook should be of great value in the teaching of dental anatomy.

Co-authors of this book include Drs. William P. Burch, Nicholas Choukas, Anthony W. Garguilo, Edward M. Nelson, John J. O'Malley, Marshal Smulson, and Harry Sicher.

Dorothy Permar, Columbus, Ohio

PROFESSIONAL ETHICS IN DENTISTRY. By John E. Gurley, D.D.S. 113 pp. St. Louis: American College of Dentists, 1961.

This fascinating and informative book is an excellent contribution to dental literature. The author establishes the premise of his subject in the preface: "the object or the principle of ethics is to emphasize spirit rather than law, whether dealing with members or fellows of one's special calling or the public in general."

Chapter 1, "The Dental Profession," contains well rationalized approaches to the study and the practice of dentistry. Chapter 2, "The Growth and Development of the Ethical Concept," presents a valuable review of the progress of ethics from the hazy and non-factual ages of tradition, mysticism, and mythology to the modern well founded concepts. It features a sequence of concise historical views and pronouncements during the evolution.

Chapter 3, "Quotes and Mis-Quotes, Paraphrases, Interpretations; Originals, Etc.," provides many appropriate excerpts from the Bible, famous philosophers, and writers on the topic of ethics. In Chapter 4, "Book Reviews and Comments," the author recites the differences in definitions of "moral," "ideal," and "ethics," and summaries of several of the representative works on ethics and its history. Included are a general "Discussion," and a reprint of the Universal Declaration of Human Rights."

Chapter 5, "Codes of Ethics Including Historical Development," carries the

evolution from the Code of Hammurabi to that approved by the American Dental Association, and contains the text of the latter. "Addendum," Chapter 6, discusses "Profession," "Dental Humanism in Public Relations," "The Dentists' Creed," and "The Dentists' Pledge." "Reading References" lists 151 well selected sources of supplemental information.

This book reflects painstaking historical research, a deep comprehension of the subject and the author's ability to present it in simple form. It is a stimulating work, and one which is recommended for thoughtful reading by both students and practitioners of dentistry.

Neal A. Harper, Columbus, Ohio

CALENDAR OF MEETINGS

CONVOCATIONS

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco

November 7, 1965, Las Vegas